

# THE IRON AGE

MARCH 10, 1927

## That "personal equation" in welding —★

**T**HERE IS a widely spread notion that welded joints are satisfactory only if you have an unusually good welder and that such welders are rare as jewels.

Let us straighten out this idea once and for all. Good welders are necessary, but with proper supervision good welders can be developed in a comparatively short time. Here, for example, are test records of single vee welds made with high grade soft iron wire by an average student during the first months of his employment:

Month	No. of Welds Tested	Average Tensile Strength
June, 1926	4	22,000
July	3	39,000
August	5	44,000
September	4	49,000
October	3	49,400



And when it is remembered that 47,000 is the average tensile strength of single vee joints with high grade soft iron wire, it can be assumed that a welder having a reasonable training period, working under proper shop conditions and competent supervision, would be able to turn out work meeting any reasonable specification.

If you exercise the same kind of care in purchasing or manufacturing welded equipment that is customary in purchasing machinery, and if you select the shop or the welder properly, you can rely on welded construction.

THE LINDE AIR PRODUCTS CO.  
Unit of Union Carbide and Carbon Corporation  
General Offices: Carbide and Carbon Bldg.  
30 East 42d Street, New York  
37 PLANTS . . . 107 WAREHOUSES

# LINDE OXYGEN

★ No. 3 of a series of advertisements on the engineering phases of oxy-acetylene welding and cutting. Send for the booklet entitled: "Engineering and Management Phases of Oxwelded Construction."



# BECKER TYPE OVENS

*for the*

## BROOKLYN UNION GAS COMPANY

A contract has been awarded to the Koppers Construction Company for the design and construction of a by-product coke and gas plant for the Brooklyn Union Gas Company at Brooklyn, New York.

This will be the second large plant of this character to be located in this district, the first being that of the Consolidated Gas Company. It will consist of 74 Becker type combination coke and gas ovens and nine Koppers gas producers, complete equipment for the recovery of by-products and a complete coal and coke handling system. This plant will have an annual carbonizing capacity of 700,000 tons of coal.

THE KOPPERS CONSTRUCTION COMPANY  
CHICAGO                      PITTSBURGH                      NEW YORK

# THE IRON AGE

New York, March 10, 1927

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In the construction of this Pacific type locomotive for the Canadian Pacific, low-carbon nickel steel frames were utilized as well as nickel steel for the boilers.



## Making Locomotives Stronger

Canadian Railroad Secures Better Quality and Service from Vanadium and Nickel Cast Steel Frames  
—Manufacture, Structure and Heat Treatment

BY W. A. NEWMAN AND C. F. PASCOE

A LOCOMOTIVE is practically built around its main frames. These carry the boiler and cylinders, inclose the journal boxes in which the main wheels rotate, and also carry the foundation brake and spring rigging. The earlier locomotives employed wrought iron frames, forged in the smith shop to required section and form. As locomotives grew in capacity, the size of the frames soon exceeded the limitations of the forge shop and, with the introduction of steel castings, cast steel and more recently, to a certain extent, cast alloy steel, became the accepted material for such important parts.

The frames of a locomotive are, unquestionably, the most important and largest castings entering into its assembly. Unfortunately they have heretofore been unduly susceptible to breakage, and frame failures have been one of the most serious types of defects with which railroad mechanical departments have had to deal.

### *Frame Subject to Many Kinds of Strain*

There is no part of a locomotive that is more difficult to analyze from a theoretical standpoint than a locomotive frame. It is subject to all kinds of longitudinal, transverse and torsional strains, all of which are influenced by the general condition of the locomotive which, taken altogether, renders it almost impossible to make any definite analysis of the distribution of stresses. For this reason, the design of frames has

been almost entirely empirical. There has been more or less of a gradual growth of sectional area in proportion to the piston thrust, which is about the only definite force on which the empirical design may be based and conversely the allowable stresses per square inch have been lowered from time to time.

About 15 years ago the Canadian Pacific Railway Co. attempted to combat the prevalence of frame failures by improving the quality of steel castings. Vanadium up to a maximum of 0.20 per cent was introduced without any other variation in the chemical analysis, the vanadium being used more for its effect upon the general structure than for any direct gain in the tensile strength. While this did improve the metal somewhat, there was no appreciable effect upon the number of frame breakages.

Once this was appreciated a careful analysis of conditions was made from the standpoint of design and the conclusion arrived at that conditions could be vastly improved by greater care in designing frames so as to eliminate some of the foundry difficulties. This step was definitely productive, in that frame failures were very greatly reduced. Undoubtedly the correct proportioning of frames will tend to reduce breakages.

### *Improving Quality with Vanadium Steel*

The next step attempted was a further improvement in the quality of metal and in 1923 the Canadian Pacific Railway Co. brought out a specification for a vanadium alloy steel frame in which it was attempted to control the uniformity of the casting as regards hardness and physical properties, as well as to obtain a

The authors are, respectively, mechanical engineer Canadian Pacific Railway Co. and metallurgist Canadian Car & Foundry Co., Ltd., and Canadian Steel Foundries, Ltd.



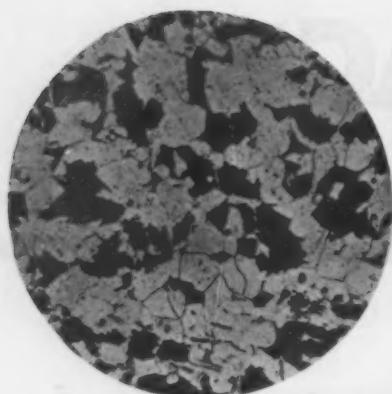


Fig. 1—Photomicrograph Showing Structure of Carbon Steel Locomotive Frame Casting, After Final Treatment. X 100

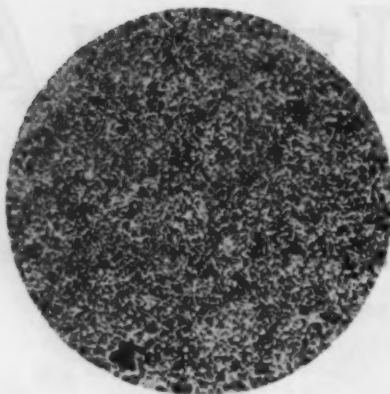


Fig. 2—Photomicrograph Showing Structure of Vanadium Steel Locomotive Frame Casting, After Final Treatment. X 100

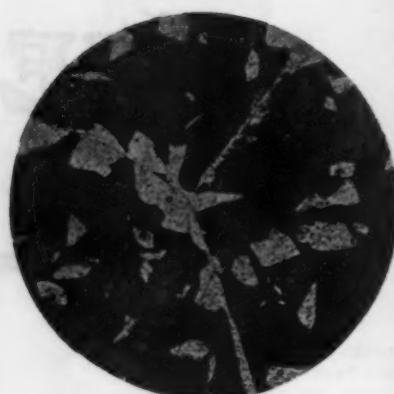


Fig. 3—Photomicrograph Showing Structure of Vanadium Steel Locomotive Frame Casting, as Cast. X 100

considerable increase in the strength of the material. At that time, 1923, the average results obtained from carbon steel castings were:

Tensile strength, lb. per sq. in.....	73,000
Yield point, lb. per sq. in.....	40,000
Yield point as expressed as per cent of tensile strength .....	55.0
Elongation, per cent.....	29.0
Reduction of area, per cent.....	47.0

These are actual average results; the specification minimums would be considerably lower. The new specification called for:

Minimum tensile strength, lb. per sq. in....	78,000
Minimum yield point, lb. per sq. in.....	43,000
Minimum yield point expressed as per cent of tensile strength.....	58.0
Minimum elongation, per cent.....	22.0
Minimum reduction of area, per cent.....	43.0

This specification also called for the casting of six to eight test coupons integral with the frame and the acceptance of the frame was dependent upon the lowest results obtained from these specimens. These specification requirements were so much in advance of what was previously required for locomotive frames that considerable difficulty was experienced in getting a steel foundry to meet the specification. The Canadian Steel Foundries of Montreal, Canada, however, cooperated fully with the Canadian Pacific Railway Co. in the early experimental work and, successful in meeting the new specification, have up to the present turned out many hundreds of pairs of frames which fully complied with the new requirements.

In all this time there have been very few failures to meet our specifications. In fact, the foundry records show that only five frames have been rejected out of a total of several hundred frames supplied for Canadian Pacific locomotives. These frames have been applied to a number of different classes of locomotives of both small and large capacity and there has yet to be ex-

perienced a service failure of frames having the physical requirements as given above.

#### Attempts to Enhance Quality Still Further

In 1925, on account of the uniformity of results obtained, the average results of which in every way exceeded the minimum requirements of the specifications, a further increase in physical requirements was made, the new specification calling for:

Minimum tensile strength, lb. per sq. in....	83,000
Minimum yield point, lb. per sq. in.....	45,000
Minimum yield point expressed as per cent tensile strength .....	54.0
Minimum elongation, per cent.....	25.0
Minimum reduction of area, per cent.....	45.0

In 1926, when the construction of 44 new locomotives was contemplated by the company, the desirability was considered of securing a frame having the maximum toughness and resistance to fatigue and impact, even at a slight sacrifice to tensile strength. It seemed that in the past too much emphasis had always been placed on the strength of the frame alone. From the days of the wrought iron frame up to the present, when the use of alloy steel is practically universal, every breakage in service reacted on the railroad officials as a demand for more strength. The logic of this can be questioned. It was, therefore, decided that, instead of straining forward to obtain the last ounce of strength, advantage should be taken of the characteristic of low-carbon nickel steel to resist impact and fatigue, while still maintaining adequate strength.

#### Low-Carbon Nickel Steel Advantageously Used

The vanadium steel frames used up to this time were dependent for the development of the required strength on a carbon content of 0.30 to 0.40 per cent. Twelve of the 44 new locomotives were ordered with nickel steel frames having a maximum carbon content



Fig. 4—Photomicrograph Showing Structure of Vanadium Steel Locomotive Frame Casting, After First Heat Treatment. X 100



Fig. 5—Photomicrograph Showing Structure of Low-Carbon Nickel Steel Locomotive Frame Casting, as Cast. X 100

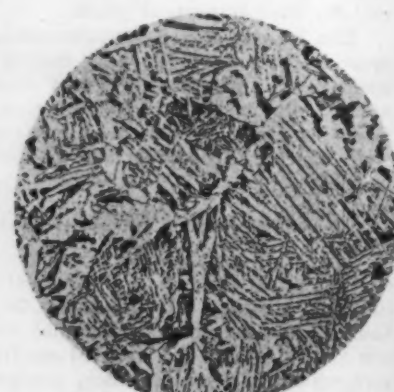


Fig. 6—Photomicrograph Showing Structure of Low-Carbon Nickel Steel Locomotive Frame Casting, After First Heat Treatment. X 100





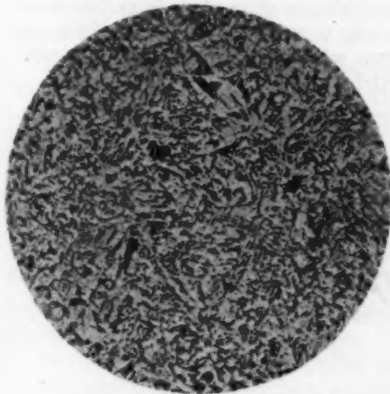
*Alloy Steel Locomotive Frame Casting, Just as Shaken Out from Sand, Showing Size and Distribution of Risers and Gates*

of 0.20 per cent. It was decided that the ultima in results were obtained with carbon about 0.18 per cent, although frames were made with carbon as low as 0.15 per cent.

This step was not radical, as it was realized that the results obtained with nickel steel were to a large degree independent of the carbon content, due to the fact that nickel dissolves in the ferrite constituent and does not depend on the formation of carbides for its characteristics. Comparative results obtained from the two classes of frames are given in the table.

It will thus be seen from the averages quoted in the table that a 2 per cent reduction in the elastic limit resulted in an increase of approximately 10 per cent in the elongation and reduction of area. The lower Brinell hardness of the nickel steel frames is, in itself, indicative of a tougher material as well as of greater ease in machining.

Although no welding is permitted in the manufacture of frames for the Canadian Pacific Railway Co.,



*Fig. 7—Photomicrograph Showing Structure of Low - Carbon Nickel Steel Locomotive Frame Casting, After Final Treatment. X 100*

the ability of alloy steels to be welded is of importance on account of the general practice of attaching small brackets, etc., by welding and also the ability to be able to weld frames should any fracture develop due to wreck damage or other causes.

The welding ability of both vanadium and nickel steel was investigated with both the oxy-acetylene and the electric method. The oxy-acetylene results were poor for the carbon steel, nickel steel and vanadium steel. With electric welding, however, good results were obtained from all three grades of materials. In fact, there is very little noticeable difference, and it might be stated that both nickel and vanadium steels may be welded with equal facility and obtain as efficient an electric weld as with carbon steel.

*Tensile Strength a Secondary Consideration*

It has always been the opinion of the Canadian Pacific Railway Co. that what was required for a locomotive frame to withstand the shocks and abuse to which they are subjected was a tough, highly ductile material with maximum elastic limit, the tensile

strength being more or less a secondary consideration. The results that we have obtained from nickel steel have been so encouraging that still further experiments are now under way in which a further reduction of carbon will be made in an attempt to increase the minimum yield point to 50,000 lb. per sq. in., minimum elongation to 30 per cent and minimum reduction of area to 50 per cent.

The necessity of developing a steel of maximum toughness will be appreciated when it is realized that

Table of Comparative Results of Two Alloy Steel Frames		
	High-Carbon Vanadium Steel	Low-Carbon Nickel Steel
Average tensile strength, lb. per sq. in. ....	87,590	79,472
Average yield point, lb. per sq. in. ....	49,442	48,495
Average yield point expressed as per cent tensile strength.....	56.5	61.0
Average elongation, per cent.....	28.5	30.4
Average reduction of area, per cent	53.6	55.8
Brinell hardness.....	150 to 165	140 to 150
Analyses		
	Per Cent	Per Cent
Carbon .....	0.36	0.17
Manganese .....	0.94	0.80
Phosphorus .....	0.015	0.014
Sulphur .....	0.028	0.028
Silicon .....	0.35	0.34
Nickel .....	...	2.70
Vanadium .....	0.19	...

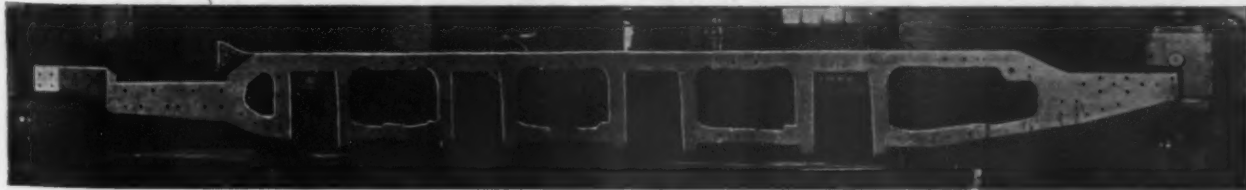
locomotives in Canada are called upon to work under exceptionally severe conditions, the temperature running as low as 60 deg. below zero Fahrenheit under extreme conditions, while temperatures of -20 deg. to -30 deg. are common during the winter months. The effect of the extreme cold, while increasing the maximum strength somewhat, is to reduce very greatly the elongation and reduction of area so that maximum initial elongations and reductions of area are desired.

*Severer Specifications and Other Alloy Steels*

It should be remembered that the castings referred to are no mere product of a small jobbing foundry. The locomotive frame structure comprises two castings weighing, as cast, 19,000 lb. each. These castings when finished weigh 11,000 lb. each.

In attempting to meet the newest specification—50,000 lb. per sq. in. yield point, 30 per cent elongation and 50 per cent reduction of area—nickel, nickel-vanadium, nickel-molybdenum and vanadium steel locomotive frames will be made, all of low carbon content, and thoroughly tested, not only by tensile tests on the attached coupons, but by tests on full-size frame sections and hollow drill cores to determine as nearly as possible the strength and ductility of the frames as a whole. The macrostructure of the various steels and their response to heat treatment will be given special consideration.

Basic open-hearth steel is used in the manufacture of locomotive frames. Good heavy melting stock of practically acid composition as regards sulphur and phosphorus is used. Silica is kept to a minimum in



*Low-Carbon Nickel Steel Frame Casting, After Machining*

the basic materials charged and the lime burden is also kept as low as possible. No great degree of reduction of phosphorus is aimed for, as it is considered better practice to select low phosphorus stock and carry only sufficient slag for proper working conditions in the furnace.

This method of making basic steel is successfully used at several works for the production of important castings which have to meet the most exacting physical requirements. The sulphur content of the steel is usually around 0.03 per cent and the phosphorus well under 0.02 per cent. The low percentage of these elements seems to have a beneficent effect on the reduction of area as the figures are a little higher than the average obtained on acid steels of similar composition as regarding other elements.

#### *Special Heat Treatment Necessary*

Double heat treatment and sometimes a low temperature drawback have been essential to comply with the requirements of the railroad company. A relatively high temperature, 1700 deg. Fahr. for the vanadium steel and 1800 deg. Fahr. for the low-carbon nickel steels, has been used for the first treatment. Two hours per inch of section at the maximum temperature is considered sufficient thoroughly to break up the coarse structure of the steel as cast.

The second treatment usually consists of reheating to 1450 deg. Fahr. for vanadium steel and 1400 deg. Fahr. for low-carbon nickel steel for one and a half hours per inch of cross section. The frames are usually cooled slowly in the furnace unless the composition requires a more rapid cooling and a drawback at 1200 deg. Fahr. in order to acquire the necessary ductility. The latter treatment is quite beneficial when the carbon content is on the high side.

Consequently, it has been decided that the heat treatment necessary to give the best results on the frame being made to the new specifications will be a double normalizing—cooling in still air after each treatment. A low temperature drawback below the critical range may be found necessary for the best results.

#### *Various Structures Interesting*

The microstructure of alloy steels is naturally considerably finer than that obtained with carbon steels of similar composition and heat treated under similar conditions. The photomicrographs shown are all taken from attached coupons. Figs. 1 and 2 are from carbon and vanadium frames treated together in the same furnace.

It will be noted that the double heat treatment on the carbon steel gives much higher ductility than is usually obtained by a single treatment. These structures are about as fine as can be obtained under the works practice which has previously been outlined. A slight increase in grain size still allows physical results within the specification limit, but any marked coarsening of the final structure will not give the required results, particularly on vanadium steel.

Impact and fatigue tests on vanadium, low-carbon nickel and straight carbon steel from locomotive frames are being carried on at the present time, the results of which seem to show that the decision to use the low-carbon nickel tougher frame was a wise one. It is considered that on large castings of such vital importance to the life and safety of a locomotive the factors of impact and fatigue resistance should be given much more consideration than they have received in the past. This work, together with other data on the experimental frames which are now under way, will be given in a later article.

## Aluminum and Its Alloys

Recent Developments Discussed by Dr. Zay Jeffries—Composition and Heat Treatment of Certain Alloys—A  
"Super-Duralumin" Developed

ALUMINUM was the subject of an interesting talk, not highly technical, by Dr. Zay Jeffries, consulting metallurgist Aluminum Co. of America and consultant General Electric Co., before the Cleveland section of the American Society of Mechanical Engineers, March 1. Nearly pure aluminum, he said, is used in the manufacture of sheets, tubes, extrusion products, and wire, as a basis for rolling foil and as a base material for powder used in the paint industry. In the casting industry pure aluminum is used to a very limited extent. The speaker pointed out the change in the physical properties of pure aluminum by cold working, which results in increasing the tensile strength from 12,000 to 35,000 lb. per sq. in. and at the same time the elongation is reduced less than 4 per cent.

Of the binary alloys three are used commercially, aluminum-copper, aluminum-manganese and aluminum-silicon. The addition of 1.25 per cent of manganese to pure aluminum increases its tensile strength and does not take away its corrosion resisting qualities. More than one-half of the aluminum castings are made from an alloy containing 8 per cent of copper. During recent years an alloy containing 7.5 per cent of copper and 1.5 per cent of zinc has been used. Another alloy now used in sand castings contains 5 per cent silicon.

The speaker said that the great value of aluminum-silicon alloys is not in their physical properties but because they are very fluid in their liquid state, so that they are well adapted for making castings having thin walls, as metal will flow freely in the mold. At freezing point the metal is very tough and cracks do not develop in the castings. For these reasons these alloys are very largely used for pressure die castings. Considerable of this alloy is used containing 13 per cent

of silicon. With an alloy of 5 per cent of copper, heat-treated and aged, a tensile strength of 36,000 to 45,000 lb. per sq. in. has been secured and a Brinell hardness of 115.

Discussing wrought alloys of aluminum, Doctor Jeffries pointed out the marked improvement in the physical properties of strong aluminum alloys under heat treatment which increases the tensile strength to from 55,000 to 63,000 lb. per sq. in. A strong aluminum alloy containing manganese is made into sheets, wire and forgings and can almost be rolled into foil. Strong aluminum alloys are used in screw machine products and forgings. Most aeroplane propellers are now forged from these alloys. The strong alloys are now being used on cars by several railroads and the Pennsylvania Railroad used them in several cars built the past year which are called aluminum cars. One aluminum car was also built by the Cleveland Railway Co. The speaker said that a super-duralumin alloy has been produced having in some cases a tensile strength of 75,000 lb. per sq. in.

Included in the list of products to be exhibited this year at the Swiss Industries Fair, to be held at Basel, Switzerland, April 2-12, are precision instruments and apparatus, electrical and power plant equipment, machinery and tools, transportation conveyances, building materials and new inventions. This fair, the origin of which dates back to the middle ages, is held exclusively for goods manufactured in Switzerland. Information about the exposition may be had from the Swiss Consulate, 470 Fourth Avenue, New York, or other consulates throughout the country.



# Germany's Exports Diversified

Industry Rebuilt Within New Frontier—Virtually  
Independent of French Ore—Exports Show  
Remarkable Recovery—Home Market Large

BY PAUL M. TYLER\*

FORMERLY divided between the Lorraine ore beds and the Westphalian coal fields, the German iron and steel industry has now been packed methodically—in efficient German fashion—into the Ruhr. This famous region, smaller than the State of Rhode Island, not only contains the leading coal resources of Continental Europe, but also, due to its strategic position on the banks of the Rhine (at the confluence of the stream which gives the district its name), is one of the few places where coal is mined extensively for export. Crowded with mines and factories and swarming with busy men and women, it keeps on growing in importance after having produced coal for 600 years.

Iron and steel form the cornerstone of German industrial life, but the whole structure rests upon coal—Westphalian coal—even more firmly now, since the twin resource of iron ore has been lost with Lorraine.

Delayed in its early development, the German steel industry, instead of expanding gradually from small beginnings, scarcely became established until after the War of 1870, which war gave to Germany both the enormous ore deposits of Alsace-Lorraine and the still greater prize of a perfected political unity. The Thomas-Gilchrist process, which was first introduced about the same time, offered the means of utilizing the Lorraine deposits and, in addition to providing a great supply of cheap steel, made available quantities of phosphate slag. The latter has proved a great boon to German agriculture, but since the soil is not naturally productive, the German economy was based upon manufacturing, upon the importation of raw materials and the exportation of the mechanical skill of a rapidly increasing and characteristically capable population.

## Government's Paternal Attitude

Both under the monarchy and under the present republican régime, the Government has always taken a hand in industry to a greater extent in Germany than in any other large nation. Bismarck cherished the ideal that it was the business of the State to provide every man with the opportunity to work. For this reason, the Empire was permeated with paternalistic policies which have persisted and are even taking more definite shape within the Republic. Governmental assistance, which begins with the maternity allowance provided at birth, follows the individual throughout his life. Before leaving school he must have mastered thoroughly some trade or profession and, before engaging in private business, he must secure a certificate of proficiency from the Government.

Groups of manufacturers are encouraged to form associations for dealing with the labor unions, and industrial relations are more definitely harmonized through the mechanism of the industrial courts. Commercial relations among manufacturers have likewise been fostered by the recognition and the semi-official support extended to the cartels. The Government has taken an active part in industrial enterprises also, and, until 1924, it operated all the main railroads. Even

apart from the manufacture of munitions, therefore, the Government was always an important buyer of iron and steel.

## Reorganization

Under the Treaty of Versailles, Germany lost—including the Saar and Luxemburg, as well as Lorraine and Upper Silesia—80 per cent of its ore and 44 per cent of its pig iron capacity, but only 35 per cent of its steel output and 33 per cent of its rolling mill production. The output of pig iron in German Lorraine and Luxemburg in 1913 was 6,417,000 tons, but the production of finished products was only 1,869,964 tons, the difference being made up by shipments of pig iron, ingots or semi-finished steel, both to Rhenish-Westphalia and to the Saar. In addition to feeding inner Germany, the lost territories provided the bulk of the exports, especially the exports of crude products.

From 1919 to 1922 Germany worked rapidly to recover the damage to its steel industry. Since 1924, after being checked by the occupation of the Ruhr, it has made even more rapid progress. The loss in productive capacity has now largely been made up. While the bad slump in the latter part of 1925 was carried over into 1926, a sharp revival (which started even before the British strike) brought production to new records of 866,300 gross tons of pig iron and 1,126,300 gross tons of steel in the month of September, 1926. These figures compare with monthly averages in 1913 of 1,374,400 tons of pig iron and 1,445,700 tons of steel.

While the number of furnaces in blast has been reduced from an average of 358 in 1913 to only 90 at the end of September, 1926, the daily output per stack had increased meanwhile from 128 gross tons in 1913 to 321 tons. The larger and more modern furnaces have nearly all been built in the Ruhr, and they were built mostly during the inflation period when capital, to avoid extinction, was used lavishly for improving the instruments of production. These furnaces replace most of those lost in Lorraine, as well as the multitude of small furnaces, many of which were not only antiquated but also economically misplaced.

Total capacity, represented by some 210 blast furnaces in working order, is estimated now at about 15,000,000 tons of pig iron, or considerably more than the 13,000,000 tons estimated for France. Steel capacity is estimated at 17,000,000 tons.

Since roughly two-thirds of the pig iron made in Germany is high in phosphorus, practically all German steel is made by a basic process. Before the war, from 55 to 60 per cent of it was basic Bessemer, and from 35 to 40 per cent was basic open-hearth, the remainder being made up by electric, acid open-hearth, crucible and an insignificant tonnage of acid Bessemer steel. Virtually all the steel plant lost after the war, however, was in the form of basic converters, and new construction has consisted mainly of open-hearth furnaces. Martin steel, therefore, has formed a much larger fraction of the total than formerly. For a time it was fully double that of Thomas steel, and recent figures indicate that the pre-war proportions are now prac-

\*1817 Thirty-seventh Street, N. W., Washington.



tically reversed, fully 60 per cent being open-hearth steel.

#### Changes in Ore Supply

Germany is credited with moderately extensive ore reserves of low-manganese brown hematites and spathic ores and a little red hematite; but, before the war, the production outside of Lorraine was scarcely 7,000,000 tons. The consumption was mostly of minette, of which 21,000,000 tons was produced in German Lorraine—mostly for local use—and some 3,750,000 tons was imported from French territory—mainly from French Lorraine.

More and more, however, Germany has been getting away from the use of Lorraine ore. Owing to the accumulation of stocks, a satisfactory analysis cannot be made from recent import statistics, but apparently, instead of employing 28,000,000 tons as in 1913, the consumption of minette has fallen until in 1925-26 it was substantially under 2,000,000 tons. On the other hand, there has been a 60 per cent increase in con-

The most striking feature of the German export trade is the completeness with which it is rounded out. The immediate effect of losing Lorraine and Luxemburg was to reduce the exports of pig iron and semi-finished steel; except for heavy shapes, exports of finished products were reduced to a much smaller extent. But even these losses have now largely been made up. Thus, when Great Britain came into the market for blooms and billets, Germany, despite the loss of territory, stood ready to supply the demand. Exports of semi-finished products, which averaged only 9000 tons a month in 1925, advanced to 23,900 tons in June, and virtually doubled in July. Similar trends can be observed for pig iron and for shapes.

Study of the import trade brings out the same evidence as to the German capacity for thoroughness and attention to detail. Before the war, Germany purchased abroad mostly specialties—hematite iron from Great Britain, charcoal iron from Sweden, and tin plate from South Wales. Since the war, abnormal increases in imports of crude and semi-finished products have

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*ANOTHER of Mr. Tyler's articles goes to the root of the situation in a leading Continental steel-producing country. Contrary to the condition found in France, where exports consist almost wholly of heavy, crude products, Germany's exports are well diversified. Recovery from the war period, interrupted during 1923 and 1924, has proceeded apace during the past two years, aided in large measure by the upbuilding of the physical plants during the time of depreciation of the mark. What this has meant to the German iron and steel industry, now concentrated in a small area on the lower Rhine, is told graphically in the article.*

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sumption of Swedish ore (most of which was shipped by rail across to the Norwegian port of Narvik). The large increase in the use of Wabana ore is of interest, although even yet it forms only a minor fraction of the total supply. Since German chemical plants have apparently not adopted the use of brimstone to the same extent as those in the United States, blue billy or spent pyrites is still a large factor, 700,000 tons or more being fed annually to the blast furnaces.

#### Foreign Trade

In 1913, Germany had perfected the most efficient export organization ever devised. After the war this organization has been repaired and is again working smoothly. The association of electrical manufacturers in Great Britain (the "Beama") has even gone so far as soberly to set down in one of its recent formal reports that in Germany "a formidable industrial machinery is being oiled up by reorganization preparatory to the biggest onslaught of modern times on the markets of the world." It says further that, under the Dawes plan, Germany must sell annually an additional half billion dollars' worth of goods abroad—particularly electrical goods, iron and steel, machinery, textiles and chemicals.

Since 1924 the increase in exports of iron and steel has been remarkably regular. In 1926 German exports increased much faster even than those of France, and eventually, toward the end of the year, the monthly tonnages reached almost 85 per cent of pre-war. Since Luxemburg, as well as the Saar and the lost areas in Lorraine and Upper Silesia, are no longer included, this means that exports from the present territory have increased substantially. Imports, on the other hand, have been progressively reduced. But even yet they are high as compared with those of France, and more than treble what they were in Germany in 1913.

been made up, item by item, so that imports are now distributed fairly evenly among different classes of products. The unfavorable balance in semi-finished products, which even in 1925 amounted to 100,000 tons, was made up, and in 1926 exports increased to several times the imports. Moreover, many of these imports—possibly 50 per cent—are in bond, generally to be re-rolled before exporting. A department which was apparently neglected until almost the last was that of rails, but the export surplus in this category, also, has become already large and is obviously increasing further.

#### Markets Well Distributed

In 1926, the Netherlands, Great Britain, Japan, the United States, British India and Argentina, in the order named, were the principal markets for German iron and steel. Large increases were registered, however, in exports to nearly every European country, the Dutch East Indies, China and certain South American countries, all of which are included in Germany's extensive list of steel buyers. Since virtually all German steel exports are shipped by way of Rotterdam, some of the shipments to the Netherlands are destined ultimately for Dutch colonies or, probably in some cases also, for unidentified foreign countries. Great Britain, therefore, is really the principal market for German steel—at least in point of tonnage. It accounts for a large portion of the semi-finished steel, but is not so important a market as the Netherlands for finished goods. Exports to the United States have grown rapidly during the last few years but, like Great Britain, the United States buys mostly crude or heavy goods. In 1926 Germany shipped about 250,000 tons of iron and steel to the United States. Roughly, 60 per cent of this was pig iron, and the remainder was made up in large part of heavy products, chiefly shapes, reinforcing bars, and a substantial tonnage of rails and splice bars.

The United States has become the leading market for German pig iron and Sweden now comes second. At least; this seems the normal line-up, although Great Britain during the strike, and occasionally Belgium, both outranked Sweden in purchases during 1926. Formerly, however, pig iron exports were confined mainly to an over-the-border trade, chiefly with Polish Silesia, Austria and Switzerland. Although nominally much greater than they were even last year, the difference is more than explained by the fact that Luxemburg is now in the customs union with Belgium, which country accounted for from 300,000 to 500,000 tons of Luxemburg or German iron annually.

While the increasing exports of blooms and billets are destined almost exclusively for Great Britain, heavy shapes are sold in various nearby countries and in the Far East. Bars and merchant mill products, generally, are consigned to the Netherlands, Denmark, Sweden, Switzerland, Japan, Argentina and England; they are securing a fair foothold in India also.

Markets for German plates and sheets are more narrowly defined. Except for Netherlands, which ranks as an important buyer in all these categories, plates go chiefly to Great Britain; medium sheets (1 to 5 mm., or No. 20 to 6½ gage) chiefly to Japan and British India; whereas thin sheets (under 1 mm.) are sold mainly nearby—to Russia, Switzerland and Italy. Italy and Switzerland account for most of the small exports of tin plate, but corrugated sheets are sold principally to Argentina.

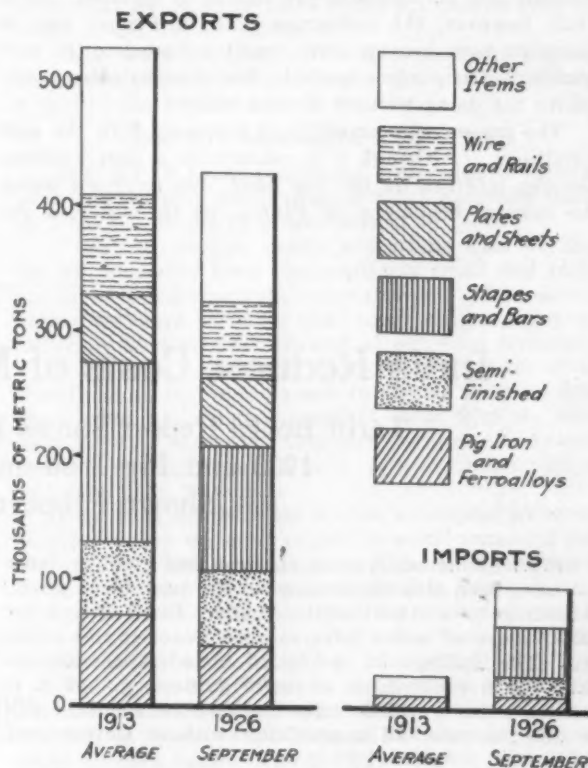
South America and the Far East are the leading markets for railroad material, and also for wire, although England also buys a considerable amount of German wire. Great Britain and Japan account for most of the wire rods, but wire goods are widely distributed, being sold extensively in Japan, Brazil, the Netherlands, British South Africa and Great Britain, all being notably good customers. Shipments of wire nails and tacks to Great Britain, however, are mostly for reshipment to British colonies.

Whereas the other leading markets for cast iron pipe are the Netherlands, China, Sweden and Denmark; for wrought pipe, the United Kingdom, Argentina, British India and, as usual, the Netherlands, are the principal buyers.

### Konzerns

More than 80 per cent of the German steel industry is made up of "Konzerns" or groups of individual firms, each dominated by a centralized financial interest and

generally having an interlocking directorate. Thus, even though not always integrated within the same plants, the same concern may be responsible for production at all stages from ore to finished product. The characteristic organization calls for the complete production within one establishment of everything from pig iron to ships, machinery, railroad cars and locomotives, or other completely fabricated products. The trend toward more extended vertical organization has been particularly marked after the war, but integration—sometimes "at a distance"—has always been an exceptionally well-developed feature of the German in-



Changes in Germany's Exports and Imports in 13 Years. Exports have declined in many items, particularly in pig iron and in bars and shapes. Imports have grown hugely, though pig iron remained about stationary.

### Imports and Exports of Germany, 1913, 1922, 1925 and 1926

(Monthly Average in Thousands of Metric Tons)

	1913 <sup>a</sup>		1922 <sup>b</sup>		1925		1926 <sup>c</sup>	
	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports	Im-ports	Ex-ports
Pig iron.....	10.4	65.3	24.5	14.4	16.8	16.0	10.1	40.1
Ferroalloys ..	0.2	6.1	0.9	...	0.5	3.3	0.2	6.6
Ingots, billets, etc .....	0.9	58.4	27.1	8.5	17.9	9.0	17.1	61.6
Shapes, heavy.	0.6	46.3	13.8	7.4	10.9	8.3	12.0	18.3
Bars and light sections ....	2.1	97.7	53.5	39.5	29.4	44.7	26.5	82.1
Plates and sheets, black	1.4	50.8	8.3	20.3	4.7	32.5	3.4	47.3
Tinned, galvanized, etc.	3.5	4.5	1.6	2.2	1.4	2.9	0.6	6.9
Wire and wire rods .....	1.0	38.5	4.2	14.5	4.1	28.3	6.0	41.0
Rails .....	0.4	41.7	12.2	23.8	8.0	24.5	12.5	19.5
Sleepers, fastenings ....	"	11.2	"	4.9	"	9.3	"	7.7
Railroad axles, etc. ....	0.1	9.5	0.0	4.8	0.0	5.9	0.2	"
Pipes and tubes, wrought ...	0.6	25.6	1.0	11.3	1.2	20.8	0.4	18.6
Pipes and tubes, cast .....	0.4	6.1	3.2	4.1	1.8	5.8	"	"
Other Items...	3.8	63.4	6.9	57.3	3.3	60.6	7.3	75.6
<b>Total ....</b>	<b>25.4</b>	<b>525.1</b>	<b>156.2</b>	<b>213.0</b>	<b>100.0</b>	<b>271.9</b>	<b>96.3</b>	<b>425.3</b>

<sup>a</sup> Includes Luxemburg in 1913. <sup>b</sup> In 1923 and 1924 returns were incomplete, due to occupation of the Ruhr. <sup>c</sup> Included with rails. <sup>d</sup> Not listed separately.

dustry, a circumstance that may be attributed to the fact that the German industry, since it was not really established until about 1880, was able to profit by the experience of the industries in neighboring countries.

"Rationalization" is another phase of the post-war situation. This rather vague term is the catch-word for popularizing common-sense management. It means balancing the various factors of production so as to obtain maximum economy. This was the plan back of the German Steel Trust (Vereinigte Stahlwerke) formed last spring, as it was for innumerable smaller amalgamations. But the movement is also improving the operation of individual plants.

Accompanying this rationalization has been the general strengthening of the cartels and a closer cooperation all around, both in productive and in commercial activities. Everywhere emphasis is placed more and more on specialization, standardization, mechanization, etc., all of which indicates a keener insight into the mysteries of "mass production." The whole movement has borne considerable fruit, as efficiency, which dropped to a low level after the war, has almost universally increased to higher standards than obtained in 1913—from coal mining up!

### International Arrangements

In the matter of international agreements, progress has found its highest expression in the formation of the so-called Continental Steel Trust, which, being modeled



after the German Raw Steel Union, not only limits ingot output in proportion to probable demand, but also shares it proportionately, more or less according to the relative ability of the different nations to produce. The present organization, however, is a wholly different one from that deemed necessary immediately after the war.

Previous to the breakdown of political and commercial relations which culminated in the occupation of the Ruhr by the French, the idea had been to develop a Franco-German entente, whereby the old balance and interdependence based upon the exchange of Westphalian coke for Lorraine ore should be restored. Since 1923, however, the industries both in France and in Germany have become more nearly adjusted to the new frontier. Germany, especially, has demonstrated a capacity for doing without French ore.

The present agreement is in harmony with the new conditions. Although it is essentially a pact between German interest, on the one hand, and interests under the general hegemony of France, on the other, it re-

lates most specifically to the regulation of competition in external markets. Arrangements for the trade back and forth among themselves have been relegated to a minor place. No definite agreement seems yet to have been made for the exchange of ore and coke which formed the essence of the earlier discussions.

During the last two years, whereas political relations have apparently improved, industrial relations between France and Germany have slowly altered from a condition of mutual dependence to one of virtual independence. This development of economic identity, however, has been accompanied by a development of cooperative agreements which mitigate competition.

A study of prices, however, leads to the belief that this condition has been due in large measure to the reimposition of duties on Lorraine pig iron and steel after Jan. 10, 1925. Because of these duties, Germany retains control of one of the most important, and by far the most vulnerable, parts of her great home market, the greatest steel market in the world outside of the United States.

## India Reduces Costs of Making Pig Iron and Steel

Tariff Board Report Shows Drop of \$7 a Ton on Steel Since 1923 and Pig Iron and Rolled Products Have Shown Proportionate Reductions

**C**OSTS of manufacturing pig iron and steel in India have been steadily reduced in the past three years, according to a report of the Indian Tariff Board for 1926, copies of which have recently reached this country. The findings of the board include recommendations for a continuance of tariff protection, but it is predicted that by 1933-34 the Indian steel industry will be able to meet all competition without Government aid.

The cost of making pig iron has been reduced from 36.28 rupees (\$13.06) per ton in 1923-24 to 25.21 rupees (\$9.08) per ton in August, 1926. Costs of making steel ingots have dropped from 71.02 rupees (\$25.57) in 1923-24 to 51.27 rupees (\$18.46) in August, last. Within the same period the cost of making finished steel products, except sheets, has dropped proportionately; rails and structural shapes from 120 to 85 rupees; bars from 132 to 105 rupees and plates from 142 to 103 rupees. The rupee is now pegged at 36c.

Progress in reducing costs of manufacturing sheets has fallen short of expectations. It was anticipated that costs of making black sheets would be 149 rupees per ton, but an average of five recent months was 170 rupees.

Factors which have contributed to reduced costs are lower prices of coal and improved practice at coke ovens, blast furnaces and open-hearth furnaces. This improved practice, it is stated, accounted for most of the reduction of about \$7 a ton in the cost of steel ingots between 1923-24 and August, 1926. Better results have been obtained in blast furnace output by changes in the proportions of materials used, by blowing more wind and by using limestone as a flux instead of dolomite. In the open-hearth furnaces the proportion of steel scrap to pig iron has been increased, while the construction of a new calcining plant has made it possible to obtain a purer lime for use as a flux.

### Pig Iron Output Exceeds Requirements

It is further stated that, while steel production has fallen short of earlier estimates, the production of pig iron available for sale has been greater than was expected. The amount which it was estimated would be available for sale was 40,000 tons annually, but the total surplus for 1924, 1925 and 1926, together with the estimated amount for 1927, totals nearly 450,000 tons.

Production of all steel in 1926 was about 925,757

gross tons. Tin bar output was 116,000 tons. Pig iron amounted to 411,000 tons.

Further extensions of existing plant are contemplated in order to round out the various production units. The Tata Iron & Steel Co.'s works as they stand are not properly inter-related, it is stated, in that the coke ovens cannot turn out sufficient coke for the manufacture of pig iron if all of the blast furnaces are in full operation and the steel furnaces cannot absorb all the pig iron which can be made, nor can they produce enough steel to keep the rolling mills fully occupied. It is thus necessary to provide additional coke ovens and steel furnaces and to this end it has already been arranged that a fourth battery of Wilputte coke ovens shall be erected and the output of steel ingots will be increased by the installation of a third tilting furnace and by rebuilding and enlarging the four oldest open-hearth furnaces. Additional soaking pits and reheating furnaces will also be provided.

Other contemplated improvements are a roughing stand and finishing department for structural shapes; new mechanical gas producers to insure greater economy in the consumption of coal; more sheet mills, and additions to the power plant and various auxiliary departments. Fuel economizing equipment, machinery for the preparation of refractory materials and construction of a benzol recovery plant are included in expansion plans.

### Indian Industry Enjoys Advantages

Referring to the future of the steel industry in India, the report comments on the natural advantages which the Indian industry enjoys. The quantity of iron ore in India, it is stated, is known to be very large and the quality compares favorably with that of deposits in other parts of the world. Coking coal, although not so good as that available in other steel manufacturing countries, is comparatively cheap, manganese is available in large quantities, while the proximity of the coal fields to the iron ore deposits reduces the freight on raw materials. The Indian steel industry is said to have a great advantage over other countries in the cost of making pig iron, and with these initial advantages the report says "it is not unreasonable to expect that in course of time steel will be produced in India at least as cheaply as in other countries."



# Problems of Too Much Plant Capacity

Our Ability to Over-Produce Frequently the Cause of Bad Business and Poor Prices, Says Pittsburgh Manufacturer

BY F. C. BIGGERT, JR.\*

WE often hear that in certain lines there is "over-production," and this is given as the reason for poor prices and bad business. Now really there is never any great amount of over-production, by which I mean that substantially everything that is produced is actually used. But there is, in a very real sense, such a thing as "over-producing capacity," and it is a frequent cause of poor prices and bad business.

In many industries there is over-producing capacity today in this country, and while the past year has been prosperous in the main, there are businesses which have suffered from over-capacity, even under these generally good conditions.

The coal industry is an instance of over-capacity; to a considerable extent the sheet steel industry has suffered similarly, likewise the cotton manufacturers, and, I am told, certain branches of the paper industry. There are facilities in this country for manufacturing probably twice as many railroad cars as we can use, and our own heavy machinery industry cannot be kept constantly employed to capacity.

There are numerous causes which have built up these over-capacities. In coal and cotton they are largely the aftermath of war conditions. Perhaps in every instance war conditions have had something to do with producing the existing situation. The car building industry can thank the change from wooden to steel cars for its plethora of capacity. Some twenty years ago it became evident that important economies could be effected by the use of steel cars, and, with typical American impatience, we fell all over ourselves in our efforts to change to steel cars over-night—result, too many car factories.

## Over-Capacity in Sheets

The advent of the automobile, development of pressed metal ware and enormous increase in the use of canned foods have stimulated the sheet steel and tin plate industries, and while they are probably not so far overdone as some others, there are indications that over-producing capacity is now threatening these industries. Incidentally, cold-rolled steel strip has made inroads into the sheet steel business and bids fair to go farther.

So it has been in one and another of our important industries. Some temporary stimulation has induced the building of more and more producing capacity until, due to some change of conditions, the industry suddenly finds itself able to produce much more than is needed.

It would be unfair to say that the existence of so many industries, with excess producing capacities, indicates a lack of business foresight on the part of the American business man. We have a growing country and one in which conditions may change suddenly, so that the best of foresight may not correctly visualize even the near future. But now the lesson is written large, and he who runs may read. We may therefore hope that, as the weaker units of our excess capacities are eliminated and as the country grows, we may be spared a repetition of the present uneconomic condition, at least in our basic industries.

Another interesting angle of our fiscal situation is the singularly isolated position we occupy. There has never been a nation so self-sufficient as we. That is to say, there has never been a nation which could so nearly produce all the things it needed as we can.

Also, there has never been a nation which had devel-

oped such a high standard of living as we, by which we mean that we consume more goods per person than any other nation has so consumed.

Also, there has not, at least since Rome's greatness, been a nation which owned and possessed so large a part of the world's gold as we now do.

## Our Self-Dependence Isolates Us

Now all of these conditions seem highly satisfactory, and yet they are conditions which naturally isolate us from the people of other nations.

If we can produce nearly everything that we need, we will evidently have comparatively small and rather one-sided commerce with other nations. If we have a higher standard of living than other nations, they will naturally be somewhat envious of our good fortunes.

If we have a disproportionately large share of the world's gold, we must expect to buy at least as much from other nations as we sell to them, else we would soon have all the gold. And yet, because of our enormous producing capacity, it is very desirable that we sell more than we buy.

The net of all these ifs is that we appear to be in a position where we must expect to work more and more for ourselves and by ourselves. There does not appear to be any great difficulty in doing this, but it is navigating uncharted waters. Heretofore industrial nations have worked on the basis of exporting their excess production to the less developed peoples.

We may find ourselves in the position of the crack marble shooter who had won all the commies from all the kids in town, loaned them all the commies and won these all back again. The gang just had to beat him up and relieve him of his excess marbles before any more marble shooting could be done. And as for the loans, they were not collectable.

## Danish and American Foundry Practice Have Points of Similarity

Exact duplication of Danish and American foundry practice is traced by Jens Hansen, a fellow of the American Scandinavian Foundation, now studying foundry conditions in this country. Mr. Hansen, a graduate of Constance Polytechnic School, Constance, Germany, is one of the three members of his society sent to the United States annually for the study of economic and industrial conditions. He first came to this country as a delegate to the Second International Foundrymen's Congress, held in Detroit in October, last year, visiting while there the recently completed large foundry of the Cadillac Motor Car Co. On leaving Detroit, Mr. Hansen will go to the foundries of large plants in Pennsylvania, to the Baldwin Locomotive Works in Philadelphia, and to the plant of the Diesel engine manufacturers.

Metal forms, baked sand cores, and the same methods of handling molten metals are used in Denmark as in the Cadillac foundry, considered one of the largest and best equipped foundries in the automotive field, he says. Aluminum is not used so extensively in Scandinavian countries as in America, while steel and gray iron are used in the stove and shipbuilding foundries. Burmeister & Wain, builders of the Diesel engine in Copenhagen, operate their own large foundries but not at such a rapid rate of production as the American foundries. Metal working cannot be called the major industry in Denmark, according to Mr. Hansen. But the Danish people can buy more with 400 kronen (\$100) a month than the American people can with \$200 a month.

\*President United Engineering & Foundry Co., Pittsburgh. The article is reprinted from "United Effort," a publication of United company.

# Electrification of Phoenix Mills

All Steam Drives and Steam Lines Eliminated—  
Structural Mill Capacity Increased  
25 Per Cent

BY R. H. WRIGHT

**P**RACTICALLY every steel plant in this country, if not already equipped with electric drives for rolling, is either engaged in electrifying one or more mills or has such work under consideration. The Phoenix Iron Co. has recently placed in operation the last unit involved in a program of complete electrification of its rolling mills at Phoenixville, Pa. All steam drives were replaced by electric motors within a period of less than three years.

The company operates open-hearth furnaces, a 36-in. reversing blooming mill, a 24-in. three-high structural mill and a 22-in. three-high bar mill. The principal product is structural steel, ranging from small angles to 20-in. I-beams. A large part of the finished steel

decided to take over the converting apparatus and include it as part of the 24-in. mill substation equipment. Two standard 1000-kw. 600-volt converters were purchased, with transformers wound to give 550-volt direct current at the converter.

Used to roll angles up to 4 x 6 in., channels up to 5 in., flats up to 12 in. and numerous other small and medium sections, the 22-in. bar mill is a three-stand three-high mill with two traveling tables. It is driven by a Westinghouse 2500-hp., 500-r.p.m., 2200-volt, 3-phase 60-cycle wound-rotor induction motor, a steel plate flywheel mounted on separate bearings and operating at motor speed, and a herringbone-gear unit designed to give a mill speed of 112 r.p.m. In the primary circuit



*Motor Driving the 24-In. Structural Mill through the Herringbone Reduction-Gear Set at Left. The motor is 3000 hp. at 325 to 485 r.p.m., with a 4.7 to 1 reduction to the mill speed of 70 to 105 r.p.m.*

goes to the shops of the Phoenix Bridge Co. for use in the fabrication of bridges and structural steel work.

As open-hearth furnaces and blooming mill are at a considerable distance from the 24-in. and 22-in. mills, it was necessary to have two boiler houses for the rolling mill engines. The engines had become obsolete and were practically worn out, and the boilers and piping were unsuited for the higher temperatures and pressures now being used. Under these conditions it was necessary to consider a complete new power system.

Arrangements were made for installing the new drives with a minimum loss of production. A study of conditions showed that the most economical operation could be obtained by completely electrifying the plant. Electric power sufficient for the entire plant was available from a local power system. It was therefore decided to use central station power and in this way to secure the advantages of electric drive with the minimum investment for new equipment.

## Bar and Structural Mills Handled First

In the construction program, as laid out, the 22-in. and 24-in. mills were the first to be electrified. An outdoor substation with oil switches and 5000-kva. transformer bank for taking power at 13,200 volts, 3 phase, 60 cycles, and distributing at 2200 volts to the 22-in. and 24-in. mill substations, was installed by the Suburban Gas & Electric Co. Provision was made for a future 13,200-volt line to the 36-in. blooming mill.

Direct current for cranes and mill auxiliaries was being supplied at 550 volts from a rotary converter owned and operated by the power company. It was

General engineer Westinghouse Electric & Manufacturing Co., East Pittsburgh.

of the motor are two hand-operated oil circuit breakers; one for running and one for plugging. A liquid slip regulator in the motor secondary is used for starting and in equalizing the peak loads.

## Structural Mill Drive

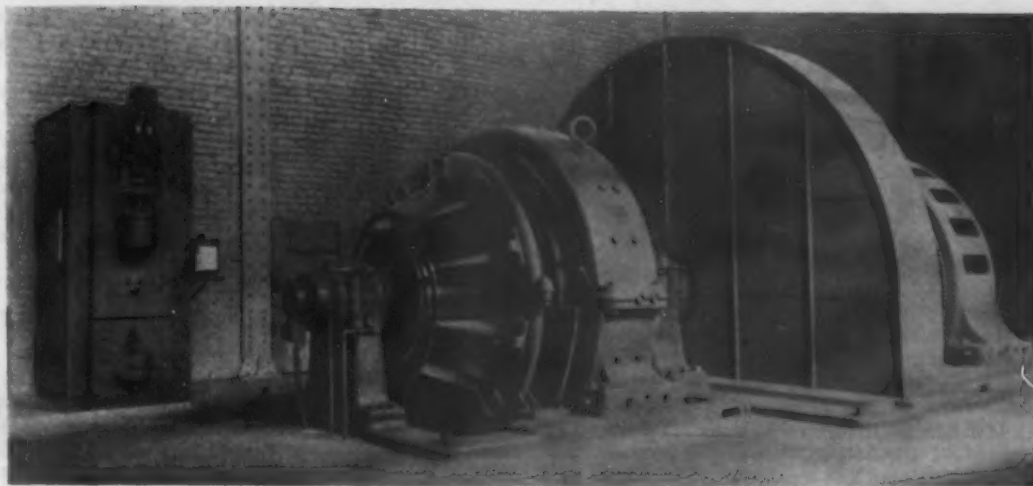
Electric drive for the 24-in. mill was placed in operation a few weeks after the 22-in. mill motor was started. This mill, used for rolling sections up to 20-in. I-beams, 15-in. channels and other heavy shapes, has three three-high stands and three traveling tilting tables. The original drive was a twin simple high-speed geared engine of the type used on light reversing mills a few decades ago. The speed of this engine could be controlled to a certain extent, and it could be reversed to back out the steel in case of trouble in the mill.

Because of the wide range of sections rolled, it was desirable to incorporate in the electric drive the ability to control the speed of the mill quickly and accurately and to stop or reverse quickly in emergencies. At the same time it was necessary to equalize the mill loads so as to control the load peaks drawn from the power lines. As all of these conditions could be met by the use of an adjustable-speed d.c. motor supplied with power through a flywheel motor-generator set, a drive of this type was installed.

On three-high structural mills it has been customary to use direct-connected motors of the reversing type. Here the space available would not permit installation of a direct-connected motor, so a high-speed motor and gear unit were applied. The motor is rated 3000 hp., 600 volts, 325 to 485 r.p.m., with maximum torque capacity between standstill and 325 r.p.m. corresponding to 7000 hp. at 325 r.p.m. The normal speed of the mill



*Motor - Generator Set, with Flywheel (in Steel-plate Casing) Furnishing 600-Volt Direct Current to the Structural Mill Motor. The cast steel flywheel weighs 30 net tons*



is 70 to 105 r.p.m. This is the largest adjustable speed motor yet used to drive a rolling mill through a herringbone-gear unit.

Direct-current power is supplied to the motor through a flywheel motor-generator set consisting of a 2500-kw., 60-volt generator; a 2500-hp., 2200-volt, 352-r.p.m. induction motor and a 60,000-lb. cast steel flywheel. The flywheel set is started and the load peaks drawn from the 2200-volt lines, limited to 2250 kw. by means of a liquid slip regulator.

#### Method of Control Adopted

A field control panel and six-point master switch, similar to those used for reversing motors, control the speed and direction of rotation of the motor. For normal rolling the mill is operated at the highest speed. If there is difficulty in entering the metal in any pass, the speed is reduced until the steel enters the rolls; then the mill is accelerated to full speed. The motor is stopped for all short delays, for delays of more than a few minutes, the flywheel set is disconnected from the a.c. power lines and allowed to drift until mill operations are resumed.

The electrical equipment and gear unit were completely installed and tried out before the engine was shut down. The engine frame and bearings were left in place. The main shaft with its gear were removed from the engine and a jack shaft substituted. In 5½ days the jack shaft and couplings were in place and the mill was ready for operation with electric power.

Within a few days after the electric drive was placed in service three outstanding features of its operation became evident. It was soon found that the capacity of the mill had been increased until it was considerably greater than that of the heating furnaces. At the same time it was discovered that the finished sections were more uniform in size and weight and that roll breakage had been reduced to the minimum. New furnaces are being installed. After they are in

service it is expected that the tonnage can be increased to 25 per cent over the previous maximum production. The energy consumption averages 45 kwhr. per ton of product.

#### Changes in Blooming Mill Drive

Blooms for the 22-in. and 24-in. finishing mills are rolled in a 36-in. two-high reversing blooming mill. This mill originally had hydraulic screwdown and manipulators and steam-driven tables. Since it is intended to replace the mill later with modern construction, it was not considered worth while to go to the expense of installing electric screwdown and manipulators. At the same time it was desired to eliminate steam apparatus at this part of the plant.

High-pressure steam pumps for the hydraulic screwdown and manipulators were replaced by a centrifugal pump driven by a 425-hp., 2200-volt induction motor. The general water system of the plan is supplied by a centrifugal pump with 200-hp. motor drive. The roll table engine was replaced by mill type motors and in this manner the economies of electric drive were obtained without expensive alterations to the mill.

The Westinghouse reversing motor which replaced the mill engine is rated 3500 hp., 50 to 120 r.p.m., 700 volts, with a maximum torque at 50 r.p.m. of 1,000,000 ft.-lb. Connection to the mill is through a universal coupling and a jack shaft mounted on the engine bearings. On account of the mill not having modern type pinions and couplings, it was expected that considerable thrust would be transmitted to the motor when the mill was rolling. To receive this thrust a special thrust bearing with special lubrication was designed for the rear pedestal. All motor pedestal and pedestal cap bolts extend into the foundation, thus giving exceptional ability to resist unusual thrusts such as may come from this mill.

The reversing motor is connected through a heavy-duty carbon circuit breaker to a 3000-kw., 700-volt,

*Blooming Mill Reversing Motor of 3500 Hp., Using Direct Current at 700 Volts. The small motor-generator set at right furnishes excitation. At left is a ventilating fan connected with the air-washing equipment*





352-r.p.m. generator forming part of a flywheel motor-generator set. The set is driven by a 2500-hp. induction motor and the load is equalized by a 60,000-lb. cast steel flywheel mounted on water-cooled bearings between the generator and driving motor.

All excitation for the generator, the shunt field of the reversing motor and all control circuits is supplied by a 35-kw., 125-volt generator. The variable potential or compounding field of the reversing motor is supplied from a 7½-kw., 125-volt series exciter.

#### Air Washers in Motor Room

Ventilation for the reversing motor and the motor room is furnished by two complete ventilating equipments, each of 30,000 cu. ft. per min. capacity. On account of the high flood level of a small stream which flows through the property, it was not practicable to have a basement. Hence the air washers and fans were located on the floor of the motor room.

All air ducts are lined with ¼-in. steel plate and all joints riveted and electrically welded, to prevent seepage of water into the ventilating system. Dampers are provided which allow either fan to be connected to the reversing motor. The exciter and fan controls are interlocked so that the exciter cannot be operated unless the fan is running. A vane interlock in the motor air duct makes it impossible to keep the main carbon circuit breaker closed unless air is actually flowing through the motor windings.

Blooms ranging in section from 4 x 4 in. to blanks for 20-in. beams are rolled from 18 x 22-in. and 21 x 24-in. ingots, with an average energy consumption for the reversing equipment and all motor room auxiliaries of 20 kwhr. per ton of finished blooms. The 15-min. demand has never reached 1000 kw. and a slip regulator setting of 1800 kw. has been found ample for the flywheel set.

One illustration is of a section of chart made by the

graphic wattmeter, which records the input to the blooming mill flywheel set. It has been found that the drafts on the steel can be increased if desired to two or three times the reductions which could be taken with the steam engine.

Power is fed from the main outdoor substation to the 36-in. mill substation over a 13,200-volt, 3-phase line. A bank of three 1000-kva. outdoor transformers reduces the potential to 2200 volts for distribution at the blooming mill. All motor room auxiliaries are supplied with power at 220 volts from a 150-kva. 2200/220/110-volt bank of indoor transformers.

#### No Changes Made in Mills Themselves

It is well known that, while the increasing use of electric drives has been the chief factor in reducing rolling costs and increasing production, there have also been improvements in the design of the mills which are responsible for better rolling conditions. On this account the replacement of many wasteful steam drives is delayed until it is felt that time and funds are available to install both a new mill and an electric drive at the same time.

At the Phoenix Iron Co. the three electric drives have been installed without any changes to the mills. The 22-in. and 24-in. mill drives have been in operation 2½ years and the reversing motor at the 36-in. mill for several months. It has been estimated that the power cost has been cut in half. This, together with other savings incident to the elimination of all steam engines, will in three years cover the cost of the electrification.

In the case of the blooming mill especially, where old-style manipulators, screwdown and other mechanical features were retained, it was shown that electrical equipment can be fitted to an existing mill without handicapping in any way any future mill equipment which may be purchased.

## Steel Company Divides Year Into Thirteen Periods

Lukens Plant at Coatesville, Pa., Finds That This Method  
Makes Possible Better Comparisons of  
Operations and Costs

THE Lukens Steel Co., Coatesville, Pa., has found after a few months' experiment that a division of the calendar year into 13 equal periods of four weeks each has worked very successfully in arriving at accurate comparisons of operations and costs.

This plan was put into effect last November and the simplification of accounting which it has brought about has convinced the officers of the company that a continuance of the plan is desirable.

Monthly comparisons of operations and costs, when the calendar months were used, did not give the Lukens company the exact results that were wanted. A month such as February of this year, for example, had four

Sundays and two holidays, leaving only 22 working days. January, however, had four Sundays and one holiday and 26 working days. When a month's expenses were assessed against the output of 22 days the cost of production per ton obviously was higher than in the case of a longer month.

Labor costs are on a per diem basis, but all selling expenses, such as salaries, traveling costs, rent of offices, etc., were formerly figured on a monthly basis, whereas now they are charged on the books only for periods of four weeks. Salaries are paid for four weeks instead of for a calendar month, salaried employees receiving 13 pay checks a year instead of 12.

### Automobile Output Shows Gain

Motor car and truck production has been speeded up this month, and a large proportion of companies are on a capacity basis, according to *Automotive Industries*. February was better than a year ago for most manufacturers except Ford, and further improvement is under way, although the total for the industry is necessarily affected considerably by the slow rate of Ford operations. Some progress has been made in curtailing used car stocks, and continued betterment in this respect should have a tonic effect on the market.

In respect to used cars, the Eastern dealers are in better condition generally than those in the South and West. Turnover in the cotton States has been particularly slow, while business in Florida this year has, of course, been well under last winter's level.

With motor car and truck exports since the first

of the year showing notable gains, the outlook for this branch of the business is being regarded most favorably.

An increasing tendency toward foreign assembling and even manufacturing operations is observed, experience having shown that not only the economies of such operations but the good will obtained through them have been a notable aid to sales.

The price situation, although a topic of widespread discussion, has remained fairly stable. If there has been a trend it has been downward, but so far the reductions have been regarded more in the light of adjustments to meet particular problems.

The next annual convention of the American Association of Engineers will be held at Tulsa, Okla., June 6-8.

# Lower Costs Asked of the Foreman

## Some Stumbling Blocks to Cheaper Production— A Study in Quantity Output at Low Cost Per Unit

BY ARTHUR MUMPER\*

THIS paper will not attempt to clear away all the stumbling blocks to cheaper production that hamper the foremen in the smaller shops. Owing to the fact that there are far more small shops in the country than there are large ones (by large shops I mean the great shops of the automotive industry and the central maintenance shops of the railroads and great steel mills), this paper is more concerned with those shops employing from 50 machinists and upward.

Perhaps the most inexcusable menace to low-cost high production in any shop is the attempt to get efficiency from old-time machine tools that have been obsolete for some time. No lathe, or planer or milling machine, built ten years ago will compete successfully with the same type machines built today, even by the same manufacturer. The door to success for any foreman will remain closed unless he uses, as a key to open it, low-cost quantity production.

### Obsolete Tools Too Costly to Keep

Cheap production simply cannot be had from obsolete tools. Often the product of these tools costs as much as and, perhaps more than, the selling price, but the difference is taken care of by the bookkeepers and the machines are made to show a profit, when they are actually an expense. A firm is indeed in a bad way when it has to make excuses for old equipment.

When a lathe or planer or milling machine cannot keep up its end as compared with other and more modern tools, it is time to scrap it and replace it with something more worth while. It costs considerable to keep old equipment in shape for accurate work and often the management loses sight of the fact that, for every cent spent on a certain machine for repairs, that cent must be added to the production cost of every piece turned out on that particular machine. Consequently, the more that machine costs for upkeep, the higher go the production costs. The shop foreman is up against a wall right there when he is asked to get cheap production.

### Heavy Cost of Rejected Work

All estimating on contract work must be based on modern production methods; the management must compete with other firms perhaps much better equipped, even when that work has to be turned out on obsolete tools. Let us take a case in point:

Certain work is routed to go to the lathe that has been standing back in the corner for the past ten years. All the foreman can do when he is handed a cost sheet

and operation layout is to scratch his head, let out a few choice cuss words and go to it. After a while the work is ready for the inspector. He turns it down and the foreman asks why. The inspector says that this, that and the other thing is wrong and he can not pass it. The foreman comes back with: "Well, I knew it would be that way. I have to do this job here; I have no alternative. When we are busy the management can not see taking time to repair machines, and when we are slack we can not spend money, for we are not making it."

Then the foreman resorts to an old trick to hold up a reputation for that machine which it lacks. "I'll watch my chance to put it on another machine and fix it up, but I'll have to keep the Old Man from knowing it." And the inspector goes away wondering if the office isn't to blame for the lack of work throughout most of the year.

### High Cost of Low Production

The high cost of low production is not always a problem of antiquated machinery. It is sometimes a problem of antiquated ideas in the heads

of many of the operators. Industry will have to rid itself of the operators who persist in doing only what they can get away with. The average shop has to contend with too many workmen who lack initiative and ambition; the ability to see where doing a good day's work every day will get them something. It seems hard to make men believe that their employer wants to give them a square deal, and this idea that they do not costs the employer considerable money by way of low production. Employers today are honest, desiring to give their men a good day's wages for a good day's work, but they have a right to expect a good day's work from their men.

There are operators who speed up when the foreman is near and slow down as he passes by; operators who slip away to smoke a cigarette several times during the day; operators who know as well as the foreman what a milling machine will do, but who start up and try to get by by doing only half what the machine is capable of producing. These men cause high costs and steal from the company, just as much as the man who enters the back window and robs the safe. Perhaps all these things which men do when they can are simply out-croppings of human nature, but industry should not have to shoulder the expense.

The age of slow production on obsolete machines is past, just as inevitably as yesterday, and the employer who will not install modern high-production machines to do his work, and men with a modern line of thought and ambition, will surely go to the wall. To have a

\*514 Richland Avenue, Wheeling, W. Va.



chance to break even with his competitor in getting new work, he must be equipped as well as his competitor. This is not enough, though, for industry cannot be satisfied by merely breaking even; it must have the edge on the other fellow.

#### High-Cost High Production

There are several ways in which a company can buy itself high production. It is just as much a mistake to equip a shop with new, expensive tools, if they are not the right kind, as it is to try for high production on worn-out tools. For instance: The firm has purchased a special machine for \$6,000. The production time is much lower on the new tool than it was formerly, but it is necessary to build expensive jigs and fixtures. The man who is placed on the machine as operator is a good man and, to get him interested and give him an idea that there is a future ahead for him, the firm gives him an increase in hourly wages.

Next, this man's time is all required on this one machine. He has leisure time on his hands, but he can not leave his machine; consequently he has a few idle hours each day that otherwise could be put to some good use. Jigs, fixtures, idle time and raise in wages must all be figured into the production cost of the parts turned out.

Then someone in authority conceives the idea of a bonus system. Now bonus systems are mighty fine to have around, but they are dangerous to handle if one gets hold of the wrong one. We will say the operator is given a goodly portion of the time he saves. If we add to the extra costs for jigs, fixtures, etc., the extra money paid to the operator as his share of the machine's earnings, the purpose for which the machine was purchased has been shot full of holes.

#### Pay Bonus to Operator Only When He Earns It; Not When Machine Does So

There are a number of good bonus systems, but I question if the employer is justified in paying a bonus on any machine except where the time saved is due to the operator's ingenuity. In the above case the employer simply purchased a high-priced machine to get higher production. I will grant that he does get higher production, but his costs are probably higher than with the old equipment.

In this instance, as in many others, the work has been planned by one who knows the how and why of shop work. The employer spends thousands of dollars for machinery; his production executive plans the moves the operator has to make; the work is trucked to him and all he does is the same thing over and over and, because of expensive equipment and elaborate operation layout sheets, all furnished by the employer, the work in finished parts piles up on the floor hour after hour. Now, my point is this: Should the operator be given a portion of the money saved by the expensive tooling and plans, or should that money be credited to the machine as a good producer?

There is no question but that a good operator should be rewarded. He becomes a valuable man to have around as soon as he becomes a good operator, but care should be exercised in choosing the method by which he is rewarded for his industry. The increased output may be due solely to the fact that an expensive machine and its equipment were purchased by the employer.

One thing is sure. Every new machine tool set up and put to work must be given a chance to come clean with production and no machine, however good, can do that if it is swamped in the beginning with overhead.

A good way is to give the operator time to show that he means business on the new machine. Then, if he has made a good showing, increase his wages with his improvement and increased production. He would rather have 2c. an hour more in his pay envelope for every

hour he works than a spasmodic bonus check. He knows it goes further. That leaves the money, that would otherwise go as bonus, to be charged off the expense account against the new machine. As long as all the money saved by the operation of that machine is diverted to other channels than the machine itself, the employer is buying high production at a high cost; but when he credits the machine itself with a portion of what it saves, then he is buying high output at a lower cost.

#### Low Cost Per Piece at High Production

We come now to the condition toward which every employer is aiming: How to get high output at low cost; how to solve the low-cost problem; is high production the answer to the low-cost problem? Where there is one manufacturer who has his eyes turned toward cheap production, there are ten who think high production is the remedy for all troubles.

The high production bug is a good thing to have, provided it means low cost. It is excellent only so long as tooling upkeep (and this means repairs to machinery, as well as jigs, fixtures, cutters, etc.) does not eat up all the profits gained by high output.

A certain manufacturing plant designs and builds first class dies for sheet-metal work. Production is watched closely, after the dies are sent to the press room. Quite frequently the piece rate per hour is raised on the operators, until they reach the point where the die setters are in too much of a hurry to set the dies, and they neglect something important in their work and perhaps the die is injured before it actually gets into production. It is sent to the shop for repairs.

Then again the operators try to meet the rate set for production and they get careless, take chances and accidents occur. This firm does get high production, but the upkeep for tools is so high that the great production is procured at high cost per piece. Another illustration is the machinist who goes beyond all reason in speeds, feeds and depth of cut and by so doing ruins the efficiency of his cutting tools.

In this case the operator should so regulate his speeds, feeds and cut that he gets the maximum output with a minimum of grinding time per piece, without too many idle machine-minutes. The point is to strike that medium where a good output will be maintained; the machine operated a maximum number of machine hours and the time lost for grinding tools and repairs cut to a minimum.

#### Efficient Routing Important

One of the greatest factors which has to do with present-day high output is efficient routing of the work and figuring the correct allotted time per piece. Often, where the number of pieces is large, the time per piece is not figured previous to the actual machine operation, but is taken from the output near the beginning of the machine period on that certain piece. It is not always necessary to be so careful in distributing the work, if the rate is not to be set until the machine is in operation on the job. But when the machine for the operation and the rate per hour are set before the job is placed in the shop, extreme care is necessary that the work be routed to the machine most economical for that particular operation.

There are various ways of arriving at the point where high output can be obtained with a low cost per piece. To do this production must be obtained by methods which will actually prove economical. Too often cheap production exists only in the mind of certain executives and not on the books at the end of the year. Jig and fixture building must be carried on cheaply, but without sacrificing production. Care must be taken that the low-cost production does not mean high repair bills, for then low-cost production becomes something else.



In the purchase of new machinery there is room for spending much money to no real advantage. Often a few hundred dollars more spent for a higher priced machine means the difference between high production at high cost and the same thing at a low cost. Wherever possible one should buy automatic machinery where one operator can take care of more than one machine.

#### Idle Time Must Be Taken into Account

It is not efficiency always to purchase high-priced tools, even though they will do more than the old tools, if it is necessary to keep a high-priced operator on the one machine. One important reason is that there are too many idle moments during the day, when the machine is not producing, and yet the operator is drawing his pay. Another thing: it is not always best to hog the operations—that is, to do everything in sight at one setup.

Often it pays to tool up for one operation only, and carry that through one piece at a time, especially where the setup or chucking operation is of no consequence. There is a psychological reason for this, too. Where the operator has but the one thing to think of at a time the operation soon becomes automatic, so far as he is concerned. He is soon doing it sub-consciously and clipping seconds off every time he makes a setup. That isn't all theory, either.

In closing, I want to add that "high production" is rather an indefinite term. How much is quantity production? What is high output? To my mind there is but one answer and that is—whatever gives the lowest cost per piece. It is easy to get these terms confused. High output does not always mean cheap production. Low repair bills do not always mean high or cheap production, but cheap production can mean but one thing: high output.

## OPEN-HEARTH END PORTS

### Using Three Uptakes and Sharp Hip Angle — Insulation Retains Heat

BY BURNHAM FINNEY\*

BY deviation from standard practice in construction, a basic open-hearth steel furnace at the Lima, Ohio, plant of the Ohio Steel Foundry Co. has been enabled to produce four 25-ton heats in 24 hr.

As indicated by the accompanying sketch, this oil-burning furnace has three instead of the customary two uptakes. Their location, together with the "hips" formed in the construction of the furnace roof, are responsible to a considerable degree for the efficient distribution and the more direct application of the superheat so necessary to speedy and uniform melting of the charges. Insulation, with special heat-resisting brick, of the furnace walls, from the floor level to the "hips,"

has been another factor contributing to the furnace's remarkable record.

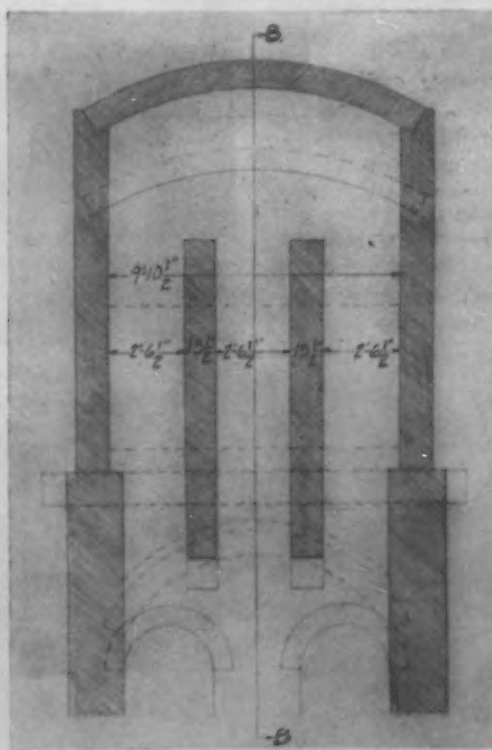
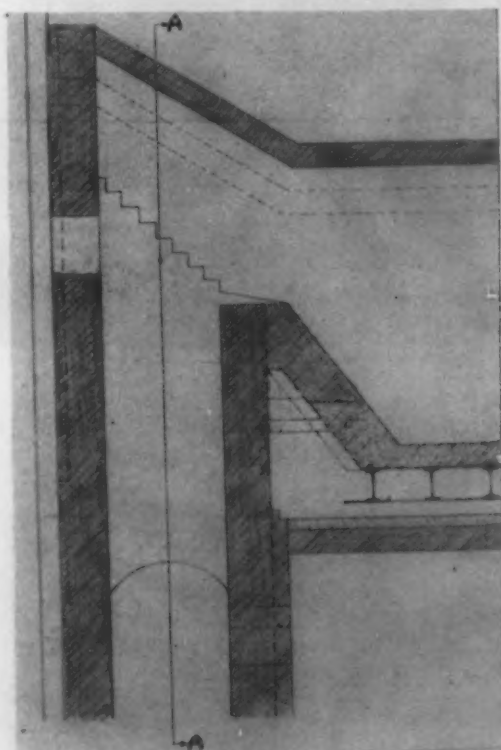
Rapidity in melting has made possible the consumption of only a small amount of fuel oil and a low quantity of basic pig iron for each heat, the result being a material diminution in the cost of steel production.

Each individual heat melts 1.00 per cent carbon, but the content is reduced to about 0.18 per cent through proper "working." The last preliminary test of the heat shows a residual manganese content of from 0.25 to 0.30 per cent, proof that the heats are not over-oxidized. Physical tests and chemical analyses of test bars taken from castings have given satisfactory results.

### Tariff and Trade Commissions Complete

WASHINGTON, March 8.—The Senate last week confirmed the nominations of Edgar S. Brossard of Utah; Sherman J. Lowell of New York and Lincoln Dixon of Indiana to be members of the United States Tariff Commission. It also confirmed the nomination of Abrams F. Myers of Iowa to be a member of the Federal Trade Commission.

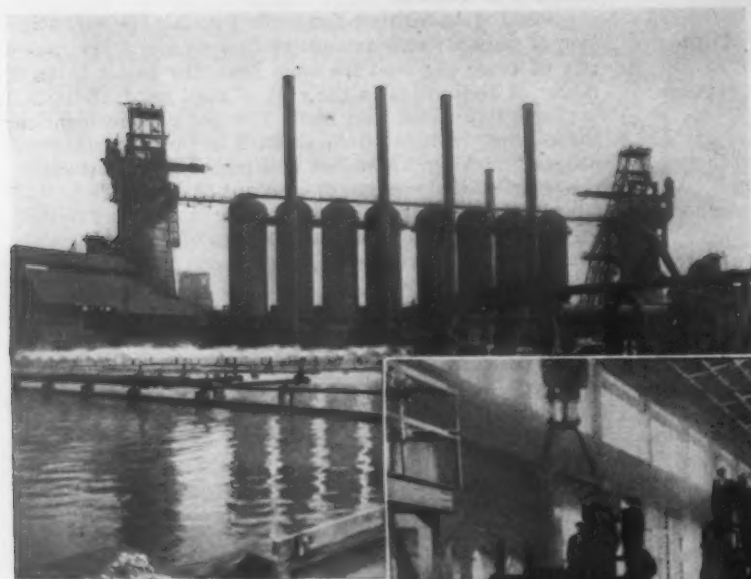
\*Resident editor at Cincinnati of THE IRON AGE.



Using a Sharply Descending Port Roof, This Furnace Throws Its Oil Flame Well on to the Bath. The view at left is a section along BB, at right; at right is a section along AA, at left. Insulating brick are used in the walls to retain heat otherwise lost

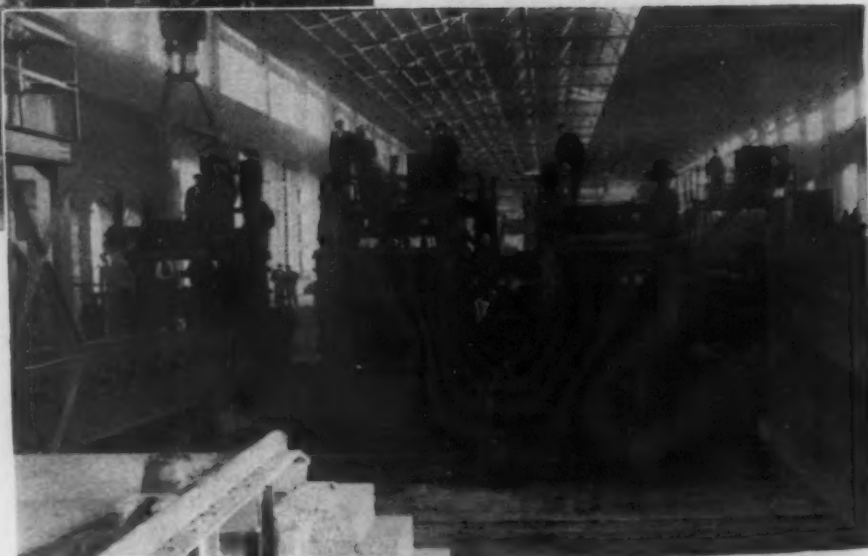
## Iron and Steel Plant of the Compañía Siderúrgica

*Extended description of this plant was given in respectively. The first article covered the general and the open-hearth steel-making units. In*



*Blast Furnaces and Hot Blast Stoves, with Cooling Ponds in Foreground*

*Below Are the Machine Shops and Foundry. In background, the briquetting and nodulizing plant*



*By-Product Coke Oven Plant. At extreme right is one of the blast furnaces*

*Rail and Structural Mill, Three-High, with Traveling Tilting Tables*





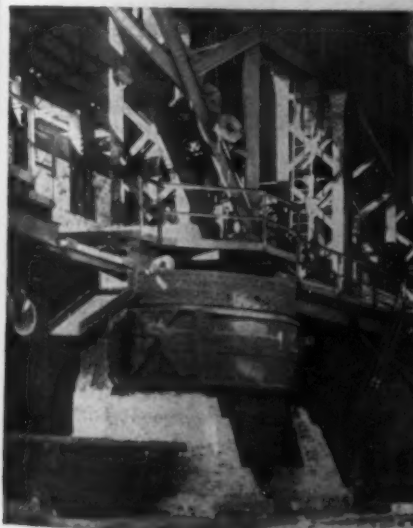
## del Mediterráneo, Located at Sagunto, Spain

our issues of Feb. 17 and 24, at pages 494 and 571  
ral layout, the blast furnace and coke oven plant  
the other article the rolling mills were described.



General View of Plant from  
End of Mole. In central dis-  
tance is the ancient fortified  
city

Casting Pit of the Open-  
Hearth Plant, Showing Brick  
Piers for Holding Ladle at  
Tapping



Blooming Mill, with  
Its Approach Table  
and Manipulators



Blast Furnaces in  
Background, Against  
the Mediterranean  
Horizon. Pig cast-  
ing and ladle re-  
pairs in foreground;  
power plant at right



### Designs Special Machine for Drilling Steel Rails

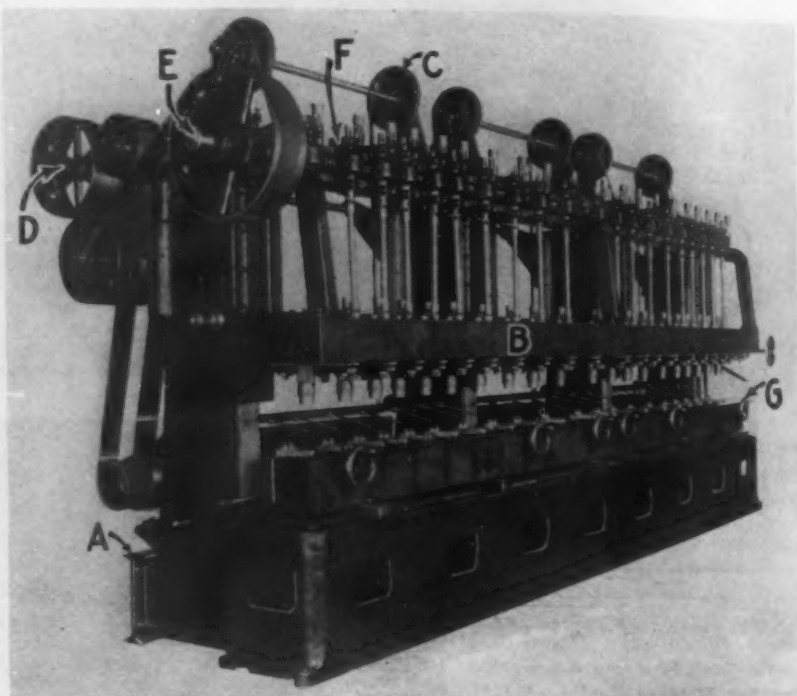
A machine for the drilling of steel rails of all sizes, and with capacity of 20 1-in. drills in steel, has been added to the line of the Moline Tool Co., Moline, Ill.

The arrangement of the machine, which is designated as the No. U-68, may be noted from the accompanying illustration. The maximum distance between the two end spindles of the machine is 20 ft. 5 in. The minimum distance between adjacent spindles is 4 in., with the exception of the two center spindles which have 5½-in. minimum center-to-center distance. The spindles have 3-in. in-and-out adjustment. The table or bed is of box section, thoroughly ribbed, and embodies a reservoir for the cutting compound. Bolted to the bed are four upright columns, also of box section, which are tied together at the bottom by the 18-in. steel I-beam seen at A, and at the top by a 12-in. steel channel section. This arrangement is stressed as providing a very rigid structure for the sliding member, B, which carries the drill spindles. The sliding member, or rail, is counterbalanced by weights which are suspended by chains carried by sheaves, one of which is shown at C.

The driving mechanism, located at the left-hand end of the machine, includes a 40-hp. motor mounted on the bottom of the machine and a two-step cone pulley which is belted to the larger cone pulley on the main drive shaft, D. A wide idler pulley acts as a self-tightener. Power is transmitted from the drive shaft to the main spiral, E, through belts and then to the driving head F by a 3-pitch spiral gear. Each driving head is laterally adjustable on the upper rail and transmits power to the pinion shaft in the driven head, on the lower rail through a shaft and universal joint. The pinion shaft meshes with a gear on the drill spindle and gives a further reduction in speed. The drill spindles are fed down together, but have 1-in.

independent end adjustment to compensate for varying lengths of drills.

The feed cycle is semi-automatic and is through a mechanism mounted on the right-hand end of the machine. The shifting of a lever engages a quick-traverse and the spindles are brought down to the work. The feed is then automatically reduced for drilling and



*Rail Drilling Machine with Capacity for Drilling 20 1-In. Holes*

when the rail has been drilled, the quick-return mechanism is engaged automatically to return the drills to the starting position.

A trough jig is provided, as shown in the illustration, this jig having in-and-out adjustments to accommodate various sizes of rails. It is also equipped with adjustable plates for the drill guide bushings. The rail is clamped in position by the hand wheels, one of which is shown at G. The total travel of the sliding rail is 30 in.

### Comparator for Checking Internal Diameter of Small Rings

An additional test comparator support making use of a comparator tube or indicator which has a knife-edge multiplication system has been brought out by the Société Genevoise d'Instruments de Physique, Geneva, Switzerland, and is being placed on the American



*Rings Ranging from 0.16 to 0.24 In. in Internal Diameter Can Be Checked*

market by the R. Y. Fener Co., Washington. The new support is intended for checking the internal diameter of very small rings. The instrument can be furnished to read in either metric or inch units. The capacity, as originally designed, is for rings varying from 4 to 6 mm. in diameter (0.16 to 0.24-in.) but with slight modifications the instrument can be used for the measurement of larger rings.

The support includes a small rectangular table on which the work to be checked is placed. Projecting from this table are a movable and a fixed contact point, the former fitting within a slot of the latter. The movable contact point is shaped for making a proper contact within holes of a range of 1 mm. above and below the nominal capacity of the instrument. This contact point is at one end of a lever arm, at the opposite end of which is an adjustable contact point that bears against the plunger of the comparator tube. The tube is mounted obliquely to facilitate reading by the user. These tubes can be supplied to read to 0.001 mm. or 0.0001 in. or 0.00005 in. per division.

In making readings on a ring, the contact plunger of the comparator tube is raised and a standard ring gage placed over the contact prongs on the table of the instrument. The comparator tube is brought to a zero reading, readings on the rings then being made by substituting the rings for this standard gage.



### Automatic Machine for Removing Cut-off Burrs from Cap Screws

The removal of cut-off burrs from cap screws at the rate of 6000 screws per hour is claimed for the machine here illustrated which has been placed on the market by Teer, Wickwire & Co., Jackson, Mich. The capacity of the machine is for screws or other pieces ranging from  $\frac{1}{4}$  to  $\frac{5}{8}$  in. in body diameter and up to 5 in. in length. It is stated that threaded screws may be burred without injury to the threads.

With the exception of filling of the hopper, operation is entirely automatic, and one operator can attend from 8 to 10 machines. The screws to be burred are delivered by the hopper to parallel rails down which they slide hanging by their heads. A reciprocating slide carrying the cutting tool, a gripping jaw and a feeding finger, is located at right angles to the rails. On the forward stroke of the slide, the side guides on the cutting tool pass over the head of the screw, pressing it down firmly against the rail. The gripping jaw then grips the body of the screw and holds it rigidly while the cutting edge of the cutting tool passes over the head of the screw and shears off the burr, flush with the top of the head. On the return stroke the gripping jaw releases the screw, and the feeding finger feeds the column of screws one space forward, thus placing an unburred screw in position for the next stroke of the machine.

All parts of the machine subject to wear are hardened or bronze bushed and provision is made for



*Although Designed for Removing Cut-off Burrs from Cap Screws, the Machine Is Adapted for Similar Work on Other Parts*

adequate lubrication. The cutting tool is of alloy steel, heat-treated, and is held in a tool holder so that the point will spring. Side guides, which ride over the head of the screw to be burred, are located ahead of the cutting head. The cutting head is at the low point of the side guides and between them. This arrangement, combined with the swing of the tool, is said to cause the burr to be cut off flush with the top of the head and also cause the screw to be properly burred even though the height of the head varies  $\frac{1}{16}$  in. high or low.

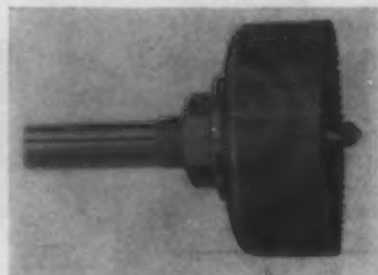
The machine is arranged for belt drive from the line shaft, tight and loose pulleys being provided. Motor-drive arrangement can be also furnished. The machine is furnished set-up for any screw within its range, but adjustment for other diameters may be made conveniently. The floor space occupied by the machine is 45 x 50 in., and the height to the top of the hopper is 49 in. The weight is 1500 lb.

### Hole Saw for Use with Portable Electric Drill

The Black & Decker Mfg. Co., Towson, Md., has brought out the "hole saw," here illustrated, which is intended for use with its  $\frac{1}{2}$ -in. and  $\frac{3}{4}$ -in. special and heavy-duty portable electric drills for the cutting of holes in cast iron, wrought iron, steel, brass, copper, wood, and other materials.

Uses for the tool include the cutting of  $\frac{3}{8}$  to  $3\frac{1}{2}$ -in. diameter holes in instrument boards for mounting dash type motometers, speedometers, oil gages, ammeters.

*Holes May Be Cut in Instrument Boards, Tanks, Radiators and Other Pieces. The twist drill provides the pilot hole that guides the saw*



etc., and the cutting of holes in iron and steel tanks, soil pipe, bath tubs, sinks, radiators, etc. The tools are made up in two sets; an automotive and a plumber's and steam fitter's set, each of which consists of five saws and two mandrels.

The tool is of saw steel, and is hardened. The mandrel is designed to hold a  $\frac{1}{4}$ -in. twist drill, which drills the pilot hole to serve as a guide for the saw.

### Industrial Engineers to Hold National Convention in Chicago

The Society of Industrial Engineers will hold its fourteenth national convention at the Hotel Stevens, Chicago, May 25, 26 and 27. The main topic to be discussed will be "Principles of Effective Management and Their Relation to Industrial Engineering."

Sessions will be held mornings and evenings and the afternoons will be devoted to plant visitations. An exhibit of production control charts, psychological test data and appliances and other material will be a feature. Programs may be obtained from the society's headquarters, 608 South Dearborn Street, Chicago.

### Gain in Sales of Foundry Equipment

A gain in sales was reported for the month of January by members of the Foundry Equipment Manufacturers' Association, Cleveland. The sales total, at \$659,417, represented an increase of 11 per cent over that of December, which in turn was 62 per cent larger than the November figure. January sales also showed a gain of 13 per cent over the total for the same month in 1926.

Shipments in January showed a loss of 19 per cent as compared with the preceding month and a loss of 25 per cent as compared with January, 1926. Orders on hand Feb. 1, 1927, totaled \$945,505, a gain of 38 per cent since Jan. 1.

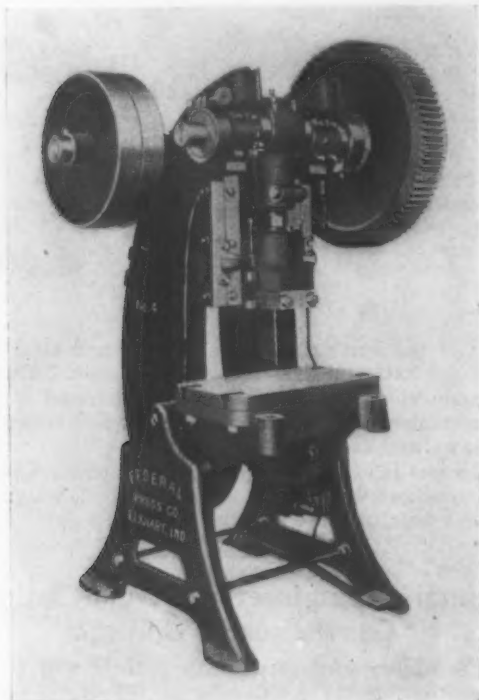
### Cleveland Industries More Active

An upturn in the industrial activity in Cleveland is indicated by the monthly survey of the Cleveland Chamber of Commerce, which shows an increase in employment of more than 1500 men during February. This is a gain of 2.2 per cent. The automotive industry showed an increase of 5.6 per cent and iron and steel manufacturers, 2.5 per cent over January.

"Why Iron and Steel Warps and Cracks" will be the subject of a talk by Prof. John F. Keller of Purdue University before the Chicago Foundrymen's Club at the City Club, Chicago, March 12.

### Adds Geared and Combination Geared Machines to Inclinable Press Line

The Federal Press Co., Elkhart, Ind., has added two sizes of geared and combination geared presses to its line of open-back inclinable presses. These machines are designated as the Nos. 4 and 5, the No. 4 plain geared type being shown in the illustration. To change the machine from plain to combination geared type, it is only necessary to attach a belt rim, which can be furnished by the company. With the belt rim



*Change from Plain Geared to Combination Geared Type Is Made by Attaching a Belt Rim*

attached the machine can be operated either as a plain geared or plain flywheel type of press.

The general design of these machines is the same as the company's high-speed heavy-duty flywheel presses of the same size, previously described. The machines are equipped with a clutch that engages at any one of three points in the flywheel and a tripping device that is claimed to minimize fatigue of the operator. The crankshafts are large and are of high-carbon steel forgings, ground to size and fitted into hand-scraped bearings. The ram has long V-shaped guides, hand-scraped to a bearing in exact alignment with the bed, and, being adjustable from both sides, the ram may be kept conveniently in alignment as it wears. The ram has a square hole, is fitted with a positive knock-out and has extension lugs at the bottom for clamping large dies.

The connecting rod is of high-carbon steel and is of one-piece ball-and-screw design. The clutch is of the square sliding type, with wearing parts of tool steel. A positive locking device locks the clutch pin out of engagement so that adjustments may be made safely and dies set without unbelting the flywheel. The releasing latch has a safety stop to prevent repeating. Driving and recoil pins are of tool steel and may be replaced conveniently when worn. The flywheel is of the solid web type.

The weight of the No. 4 press, geared, is 4200 lb. and of the combination geared machine, 4350 lb. The ram makes 48 strokes per min. and exerts pressure of 42 tons.

The Federal Specifications Board has just issued new specifications on steel, one being No. 471, covering cupboard and locker equipment, and the other No. 469, for structural material for ships other than naval vessels.

### New Jersey Steel Fabricators Discuss Sales Problems

Sales problems of the structural steel industry were discussed at a meeting of the Iron League of New Jersey, held at the Elks Club, Irvington, N. J., Feb. 28. The meeting was attended by more than 100 fabricators of structural steel. C. V. Hesselbach, president of the Iron League of New Jersey and of the Calumet Iron Works, Newark, N. J., was chairman.

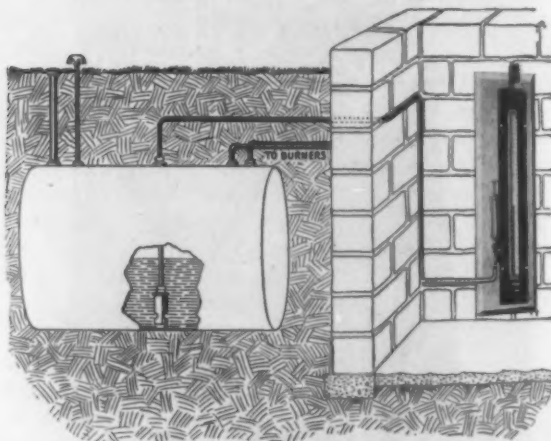
A message from W. M. Wood, president of the American Institute of Steel Construction, was read by George E. J. Pistor of the Hay Foundry & Iron Works, Newark. Mr. Wood stressed the importance of a sales price based upon an accurate analysis of costs plus a fair profit. He pointed out that the practice of cutting the price in an effort to snatch the job in sight constitutes a menace to the welfare of the industry.

Charles F. Abbott, executive director American Institute of Steel Construction, spoke on the necessity of adopting new principles of merchandising as they apply to structural steel. "We must," he said, "sell the advantages of structural steel as a building material before we can sell particular shapes of steel for a specific job. This calls for cooperative effort on the part of the entire industry."

### Indicates Level and Number of Gallons of Oil in Tanks

A liquid level gage arranged for showing at a glance the level and number of gallons of oil, water, acids or alkalis in storage tanks has been placed upon the market by the National Oil Gauge Co., Chicago. The device, named the Oilmetre, will indicate capacities up to 5000 gal., but may be calibrated for other capacities.

The instrument consists of a column mounted in a



*The Indicator May Be Mounted at Any Distance and Placed Either Above or Below the Oil Storage Tank*

housing and connected to a pump and outlet which is piped to the storage tank. There are no mechanically moving parts, springs, floats nor wiring, and additional or auxiliary parts are not required. Installation consists of merely mounting the gage upon the wall and connecting it by a single  $\frac{1}{4}$ -in. tube to the tank. It may be located at any distance and placed either above or below the tank. The size of the column permits reading the gage from a considerable distance in front or at one side.

Two scales are employed, one of which, at the right hand, indicates the level of the liquid in the tanks, and the other, at the left hand, shows the contents of the tank in gallons. The scale graduations depend upon the dimensions of the tanks. The liquid in the column rises and falls according to the amount of liquid contained in the tank. The gage is entirely air operated, and is not subject to corrosion, gumming or sticking. The design is such that no fire hazard is introduced and there is no leakage or syphoning. Through a suitable arrangement of piping, the device can be used to show liquid levels or contents of a number of tanks.



# Fuels, Coke and Furnace Slags

Lively Discussions at Eastern States Association Meeting—  
German and American Economics Compared  
—Disposing of Slag

NOT only was the annual winter meeting of the Eastern States Blast Furnace and Coke Oven Association, held at the William Penn Hotel, Pittsburgh, March 4, with a registration of 141, one of the most largely attended gatherings of the association since its organization six years ago, but it gave fresh evidence, in the form of three excellent papers, of which discussion was free and enlightening, that this organization is amply fulfilling the ideas of its founders in supplying a means for the dissemination of information on blast furnace and coke oven operation. This was the second meeting given over to all-day technical sessions and, like the first one, also held in Pittsburgh, a year ago, was gratifying from point of interest displayed and in attendance.

A more varied program of papers of interest to those present could not easily have been formulated. One paper had to do with fuel economy in the steel industry; another was on blast furnace slags; the third detailed the results of a method of dry quenching of by-product coke, recently introduced in this country at the plant of the Rochester Gas & Electric Corporation, Rochester, N. Y., and described in *THE IRON AGE*, Feb. 10, 1927, page 425.

## Steel Industry Fuel Economies

H. A. Brassert, president H. A. Brassert & Co., Chicago, in his paper on "Economical Use of Fuel in the Steel Industry," enlarged upon a similar paper read at the International Conference on Bituminous Coal, held in Pittsburgh, Nov. 15 to 18, last year. The paper was a thorough and painstaking analysis of every fuel problem in the steel plant. Most of those who discussed it complained of the difficulty of adding anything to what he had said.

C. A. Meissner, chairman coke oven, blast furnace and open-hearth committees, United States Steel Corporation, said that there were so many fuels to be considered that the matter of their proper burning did not seem to get the attention it deserved. He agreed with Mr. Brassert that the American steel industry had not advanced so much as the European manufacturers and also that the excessive use of raw coal should be avoided. That was a waste, he said, which could be escaped by screening out more breeze and using it in place of coal.

E. F. Entwisle, assistant general manager Steelton, Pa., works, Bethlehem Steel Co., in a formal discussion of the paper, dwelt mainly on a comparison Mr. Brassert had made between the heat economy as practiced in Germany and that in this country, to the apparent advantage of the German steel makers. Mr. Entwisle explained that this condition arose chiefly out of the fact that in Germany the steel is largely made by the Bessemer process, while on this side of the water it is predominately open-hearth.

## Quantity of Thermal Units Involved

In the 100 per cent German Bessemer plant, he summarized there would be a production of 17,000,000 B.t.u. per ton of ingots produced and a requirement of 7,000,000 B.t.u. per ton of ingots produced; while in an American plant, running 80 per cent to open-hearth and 20 per cent to Bessemer steel, there would be a production of only 11,000,000 to 12,000,000 B.t.u. per ton of ingots

produced, against a requirement of 8,000,000 B.t.u. per ton of ingots.

Mr. McLaughlin, Duquesne works, Carnegie Steel Co., observed that a general comparison between German and American practice would be impossible, as there would be a variation in the results of each American plant, in keeping with the variation in what was regarded as the heat potential and the recovery of sensible heat. A. J. Boynton, vice-president H. A. Brassert & Co., thought that the cost of application was an essential to any conclusion, as well as the rate of use of expensive installations, such as a central gas plant, which he suggested might be necessary. John Hacker, superintendent of coke ovens, Central Alloy Steel Corporation, Massillon, Ohio, thought some effort should be expended in properly valuing hydrogen-bearing heat, and said that generally accepted heat values were too high in actual practice and likely to be misleading. Putting the recovery of tar from coal at over 9 gal. per ton was too high, except from low volatile coal.

## Disposing of Blast Furnace Slag

"Use of Blast Furnace Slag as an Aggregate," the subject of a paper by P. J. Freeman, chief engineer Bureau of Tests and Specifications, Allegheny County, touched upon the results of experiments with various aggregates in concrete road construction. W. E. Donaldson, special agent in charge of slag sales of several of the Steel Corporation subsidiaries, pointed the way toward greater use of blast furnace slag through its more careful preparation.

W. A. Haven, superintendent of blast furnaces, Republic Iron & Steel Co., expressed the belief that it still costs the pig iron producers money to dispose of their slag, despite the fact that, instead of paying the railroads a high price to "waste" it, there is a nominal payment and some iron recovery from the slag companies. The demands of the slag companies are exacting and there is still too much tendency, he said, to regard slag as a waste product instead of a valuable by-product, which it could be made if steps were taken to densify it through slow cooling in ways that would permit the gases to escape and prevent the honeycombed or spongy condition generally complained of.

J. Whiting, Donner Steel Co., Buffalo, said that, instead of costing his company \$75,000 a year to dispose of slag as formerly, there is now a return of \$30,000 on the slag from two blast furnaces. The blast furnace is no longer merely a pig iron smelting unit exclusively, but should be regarded as a producer, also, of valuable slag and gas. The three components of slag are alumina, silica and magnesium. He said that slags usually are unstable if they run more than 50 per cent silica. Keeping the silica below that line is the accepted way to produce good slag. He also urged slow cooling.

Discussion of Mr. Beebe's paper, "Dry Quenching of Coke," as might be expected, verged toward the practicability of the Sulzer Frères equipment in the production of blast furnace coke. It was the common expression of those who discussed the paper that, because of the rough handling of the coke, it would be broken smaller than is desired for the blast furnace. But B. W. Winship, Steelton works, Bethlehem Steel Co., said he was convinced that the breakage could be reduced

and the steam return would justify the expense of an installation, unless some metallurgical reason would count against it. He believed the equipment a good one for the preparation of domestic coke. [Abstract of this paper will be published next week.]

#### Dinner and New Members

The meeting concluded with a dinner in the evening, a feature of which was the reading of an original poem on steel by George Wardley, Joliet works, Illinois Steel Co., inspired by the retirement recently of one of the men who saw that company rise from small beginnings.

Announcement was made of the election to membership in the association of:

H. L. Quinn, assistant superintendent of blast furnace, Carnegie Steel Co., Mingo, Ohio; R. Clyde Butler, superintendent of blast furnace, Sharon Steel Hoop Co., Lowellville, Ohio; William Tiddy, chemical engineer, Rainey-Wood Coke Co., Swedeland, Pa.; Harvey B. Jordan, assistant superintendent, Central Furnaces and Docks, American Steel & Wire Co., Cleveland, Ohio; C. W. Yetter, assistant superintendent coke works, Republic Iron & Steel Co., Youngstown, Ohio; William S. Orr, chief engineer Central Alloy Steel Corporation, Massillon, Ohio; Alexander M. Beebe, superintendent Rochester Gas & Electric Corporation, Rochester, N. Y.; R. D. Platt, chief engineer Koppers Co., Pittsburgh; Thomas M. Hart, assistant superintendent by-product coke ovens, Jones & Laughlin Steel Corporation, Pittsburgh; E. F. Entwisle, assistant general manager Bethlehem Steel Co., Steelton, Pa.; Harry Heffrin, superintendent Top Furnace, Wheeling Steel Corporation, Wheeling, W. Va.; Ralph Kent, assistant superintendent Franklin coke works, Bethlehem Steel Co., Johnstown, Pa.; Edwin J. Pearson, general superintendent, Clinton Iron & Steel Co., Pittsburgh; Nils Anderson, president Temple Furnace Co., Temple, Pa.; Maurice D. Langhorne, general superintendent Lavino Furnace Co., Lebanon, Pa.; and H. W. Seyler, chemical engineer, by-product coke works, Carnegie Steel Co., Clairton, Pa.

#### E. A. Muller Again Heads Cincinnati Metal Branch

Edward A. Muller, vice-president and general manager King Machine Tool Co., was elected president of the Cincinnati branch of the National Metal Trades Association for the third consecutive year at the annual meeting March 2 at the Cincinnati Club. Other officers who will serve are: A. B. Breeze, Cincinnati Ball Crank Co., vice-president; H. A. Feldbush, Worthington Pump & Machinery Corporation, secretary; and J. E. Mills, Smith & Mills Co., treasurer. Members of the executive committee are: George Schiels; George A. Seyler, Lunkenheimer Co.; and Harold LeBlond, G. A. Schacht Motor Truck Co.

Warning against communists was sounded by O. L. Smith, former attorney-general of Michigan, who prosecuted the 81 alleged communist leaders arrested at a secret meeting near Bridgeman, Mich. Addresses also were made by Harry F. Atwood, Chicago attorney, and J. E. Nyhan, national secretary.

In his annual report J. M. Manley, executive secretary of the Cincinnati branch, stated that "it is important that our workers shall be straight thinkers and efficient in every contact with business and production." He urged the members to "make our factories the best lighted, the best heated and ventilated, and the most sanitary of any in the country, and to make our workers the highest skilled, the happiest and most contented, the most efficient and the best paid in the metal industry."

January production of electric power by public utility plants in the United States is reported by the Geological Survey at 6714 millions of kwhr. Except for the December total of 6794, this is the largest send-out in the history of the industry. Previous to December, the greatest production was in October, with 6555. January showed an increase of 10 per cent over the 6121 of January, 1926. Water-power, in the past three months, has accounted for 35 per cent of the total. The aggregate of all power sent out in 1926 was 73,384,000,000 kwhr., or a monthly average of 6115 millions.

#### Boston Metal Manufacturers Hear Pros and Cons of Communism

About 200 members of the Boston branch, National Metal Trades Association, attended the twenty-second annual meeting Wednesday evening, March 2, at Young's Hotel, Boston. Interest in the meeting was aroused by an announcement by Clarence H. Wilson, secretary, that one of the most widely known communists in the country had been permitted, under police protection, to speak, and that J. Robert O'Brien, National Security League, New York, would answer all arguments advanced by the communist.

Mr. O'Brien proved to be both himself and the communist. His dual rôle was exceedingly well handled. He was unrelenting in his attack on capital when made up as the communist, and convincing when the disguise was thrown aside. Boston ranks third in this country as a communist center, and Mr. O'Brien pointed out many communistic activities in and about the Hub, particularly through the medium of summer schools.

Other speakers included Paul T. Norton, president National Metal Trades Association, and Homer D. Sayre, commissioner of that organization.

Roger K. Buxton, Walworth Co., South Boston, was elected a member of the executive committee to succeed Theodore W. Little, who recently relinquished his connection with the Walworth Co. Otherwise the retiring executive committees and officers of the Boston branch were reelected.

Officers of the branch are: J. R. Kinney, Kinney Mfg. Co., Jamaica Plain, Boston, president; H. K. Spencer, Blanchard Machine Co., Cambridge, vice-president; Fred P. Kinney, Kinney Mfg. Co., treasurer.

In addition to Mr. Buxton, the executive committee consists of Gordon W. Russell, James Russell Boiler Works, Dorchester, Boston; Howard A. Lincoln, Sullivan Machinery Co., Claremont, N. H.; F. J. Shepard, Lewis-Shepard Co., Watertown; Matthew Porosky, Holtzer-Cabot Electric Co., Roxbury, Boston; and F. F. Raymond, Crosby Steam Gage & Valve Co., Boston.

Honorary members are: Fred F. Stockwell, Barbour-Stockwell Co., Cambridge; Martin B. McLauthlin, George T. McLauthlin Co., Boston; George P. Aborn, Worthington Pump & Machinery Corporation, East Cambridge; Ralph E. Thompson, Gillette Safety Razor Co., South Boston; and Wolcott Remington, Thomson Electric Welding Co., Lynn, Mass. Mr. Stockwell, who has been affiliated with the Boston branch for many years, has been secretary of the New England Foundrymen's Association since its inception.

#### New Discounts on Bolts and Nuts Announced

New discounts on bolts and nuts, effective April 1, have been announced by the Buffalo Bolt Co., North Tonawanda, N. Y. Instead of different discounts for the various classes of bolts and nuts, there is a common discount of 70 per cent, f.o.b. Pittsburgh, Cleveland, Chicago or Birmingham, from new list prices which will be published shortly. The present list prices have been in effect since September, 1923. The 70 per cent discount will apply on carriage bolts, machine bolts, blank bolts, tap bolts, lag bolts, hanger bolts, plow bolts, elevator bolts, step bolts, stud bolts, track bolts, hot-pressed and cold-punched nuts, semi-finished nuts and castellated nuts. Terms are 30 days net or less 1 per cent for cash 10 days from date of invoice.

The new list prices are based on cost studies carried on over the past two years.

Production of bituminous coal is tapering off, according to figures issued by the United States Bureau of Mines. Total output for the week ended Feb. 26 is given at 12,761,000 net tons, compared with 13,193,000 tons in the preceding week and with 13,487,000 tons in the week ended Feb. 12. Though the more recent week included Washington's Birthday, it is estimated that this was equivalent to 0.9 work day.



# Steel Cartel to Increase Quota

Germany May Ask Cartel Sales and Price Control or Quotas Based on Products—  
South African Manganese Ore Mines to Be Developed

(By Cable)

LONDON, ENGLAND, March 7.

PIG iron is quiet as a result of the reluctance of domestic consumers to contract for more than immediate requirements and export business has virtually ceased. High fuel prices continue an obstacle to reductions in foundry and forge iron quotations. Hematite prices are easier with increased competition from West Coast makers. Foreign ore is still dull.

Finished iron and steel demand is broadening, but shipments are still restricted to makers actively engaged in filling old contracts. Deliveries are in arrears, although works are operating at as full capacity as possible.

Tin plate is quiet but prices are irregular because of the varying conditions of works order books. Makers well booked with business are asking up to 20s.

3d. (\$4.91) per base box, while others have accepted as low as 19s. 9d. (\$4.78) per base box and less. General demand is poor, because of the instability of prices, but a fair volume of needs is considered to be accumulating. Galvanized sheets are moderately active in small lots. Black sheets are quiet.

Demand for continental iron and steel is hampered by the high prices now asked, especially for semi-finished materials. British consumers are consequently cautious purchasers. This situation is difficult to fathom, as many works are in need of tonnage.

The International Raw Steel Cartel has decided to increase the quota for second quarter, by reverting to the quota which was in force during the last quarter of 1926, which is contrary to the first announcements that were made. The Pont-a-Mousson works in France has secured an order for 6500 tons of cast iron pipe for the South India hydroelectric project.

## GERMAN HOME ORDERS LARGE

Mills Booked Several Months Ahead—Shipyards Active—Increase in Output of Workers

BERLIN, GERMANY, Feb. 22.—Domestic business continues at a high level and steel mills in western Germany have booked sufficient orders to carry them into the summer. Spring demand has not yet developed but a considerable increase in residential and industrial construction is generally expected. The export market continues quiet and prices weak and, with the Chinese political difficulties added to the resumption of British production following the coal strike, firmness in the foreign market is not expected for some time.

Although mills are well filled with business, rolling mills are offering slightly earlier deliveries than recently. The market on steel bars and bands is active but pipe and tubes are quiet and the sheet market is weak, particularly in the light gages. Repeated at-

tempts to establish a thin sheet syndicate have failed, largely as a result of the opposition from the Siegerland producers.

The market for railroad permanent way material has improved and desirable business is being negotiated with Rumania and the Scandinavian countries. Shipbuilding is also active. Unbuilt tonnage on the books of shipyards totals about 600,000 tons, and includes about 180,000 tons from the North German Lloyd, 90,000 tons from the Hamburg-American Line and 87,000 tons from Norwegian shipping companies.

Efforts toward more efficient operation in the iron and steel industry have been attended with success. Output of pig iron per furnace increased 57 per cent in 1925 and was increased by a further 33 per cent in 1926. Based on production and the number of employees to a furnace, the output of pig iron was 1.17 tons per day per capita in 1925 and 1.60 tons per day, per capita in 1926. In the steel mills the output of steel products averaged 1.23 tons per day, per capita in 1925 and 1.77 tons per day per capita in 1926. This and the general activity of the market has induced a

British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at \$4.85 per £ as follows:

	£1	0s.	to £1	7s.	\$6.30	to	\$6.54
Durham coke, f.o.b.	1	2	to 1	2½	5.33	to	5.45
Bilbao Rubio ore†	4	7½			21.22*		
Cleveland No. 1 fdy.	4	2½			20.00*		
Cleveland No. 2 fdy.	4	1½			19.76*		
Cleveland No. 4 fdy.	4	1			19.64*		
Cleveland No. 4 forge	3	15	to 3	15½	18.18	to	18.30
Cleveland basic	4	8	to 4	9	21.34	to	21.58
East Coast mixed	4	9	to 4	10	21.58	to	21.82
East Coast hematite	7	15	to 7	16	37.58	to	38.80
Rails, 60 lb. and up	7	5	to 7	10	35.16	to	36.37
Billets	16	0			77.60		
Ferromanganese	15	15			76.38		
(export)							
Sheet and tin plate	6	5	to 6	10	30.31	to	31.52
bars, Welsh	0	19½	to 1	0¼	4.78	to	4.91
Tin plate, base box	14	0	to 14	10	67.90	to	70.32
Black sheets, Japan- ese specifications							
C. per Lb.							
Ship plates	8	10			1.84		
Boiler plates	11	0	to 11	10	2.38	to	2.49
Tees	8	12½	to 9	2½	1.86	to	1.98
Channels	7	17½	to 8	7½	1.70	to	1.81
Beams	7	12½	to 8	2½	1.65	to	1.76
Round bars, ¾ to 3 in.	8	5	to 8	15	1.78	to	1.89
Steel hoops	10	10	to 11	0	2.28	to	2.39
Black sheets, 24 gage	11	0			2.39		
Galv. sheets, 24 gage	15	0	to 15	5	3.24	to	3.30
Cold rolled steel strip, 20 gage, nom.	18	0			3.91		

\*Export price, 6d. (12c.) per ton higher.  
†Ex-ship, Tees, nominal.

## Continental Prices, All F.O.B. Channel Ports (Per Metric Ton)

Foundry pig iron:(a)							
Belgium	£3	13s.	to £3	13s.	\$17.70	to	\$18.90
France	3	12	to 3	12	17.70	to	18.90
Luxemburg	3	12	to 3	12	17.70	to	18.90
Basic pig iron:							
Belgium	3	8			16.49		
France	3	8			16.49		
Luxemburg	3	8			16.49		
Coke	0	18			4.27		
Billets:							
Belgium	4	12	to 4	12	22.30	to	22.55
France	4	12	to 4	12	22.30	to	22.55
Merchant bars:							
Belgium	5	1	to 5	3	1.11	to	1.12
Luxemburg	5	1	to 5	3	1.11	to	1.12
France	5	1	to 5	3	1.11	to	1.12
Joists (beams):							
Belgium	5	1	to 5	2	1.11	to	1.12
Luxemburg	5	1	to 5	2	1.11	to	1.12
France	5	1	to 5	2	1.11	to	1.12
Angles:							
Belgium	5	0			1.10		
½-in. plates:							
Belgium (nominal)	6	12			1.46		
Germany (nominal)	6	12			1.46		
¾-in. ship plates:							
Belgium	6	3			1.34		
Luxemburg	6	3			1.34		
Sheets, heavy:							
Belgium	6	3	to 6	4	1.33	to	1.34
Germany	6	3	to 6	4	1.33	to	1.34

(a) Nominal.

demand for higher wages, which may result in labor difficulties.

A recent government report shows that the average working hours in the metal industries considerably exceed 48 hr. a week and the tendency is upward. The report shows that in April, 1926, of 406,126 men covered by the inquiry, 130,489 were working more than 48 hr. a week. In October, 1926, of 379,515 men in the metal industry, 182,111 were working more than a 48-hr. week. Of the workmen in all industries covered by the investigation, 40 per cent were working from 50 to 54 hr. a week.

January registered a decrease in output of pig iron and a slight increase in steel production. The output of pig iron was 1,059,798 tons in January and 1,064,000 tons in December. Steel production was 1,308,420 tons in January and 1,303,141 tons in December. German imports of iron ore in 1926 registered a decline, with 9,550,000 tons compared with 11,540,000 tons in 1925 and 14,020,000 tons in 1913.

## CARTEL REFUNDS PAYMENTS

### Germany, Belgium and Saar Exceeded Quotas and France and Luxemburg Show Deficits

BERLIN, GERMANY, Feb. 22.—The balance sheet of the International Raw Steel Cartel for the last quarter of 1926 has been prepared and lists among the countries which overproduced, Germany, Belgium and the Saar, with France and Luxemburg as the members which did not reach their full quotas. The following table lists the excess tonnage and the total fines paid:

Member	Excess Metric Tons	Fine \$4 per Ton
Germany .....	575,000	\$2,300,000
Belgium .....	91,000	364,000
Saar .....	30,000	120,000
Total .....	696,000	\$2,784,000
Output of all members at \$1 per ton.....	7,922,000	7,922,000
Total received .....		\$10,706,000

The two members failing to reach their quotas were France with a deficit of 86,000 metric tons and Luxemburg with a deficit of 10,000 tons. At \$2 a ton for this deficit, France receives \$172,000 and Luxemburg \$20,000. Deducting this total from the \$10,706,000 received by the cartel for quota production and excess output, \$10,514,000 remains for distribution to all members, as follows:

Member	Paid	Receives	Profit or Loss
Germany ..	\$6,036,000	\$4,540,000	— \$1,496,000
France ....	2,025,000	3,278,000	+ 1,253,000
Belgium ...	1,302,000	1,215,000	— 87,000
Luxemburg ..	578,000	873,000	+ 295,000
Saar .....	573,000	608,000	+ 35,000
	\$10,514,000	\$10,514,000	

It is pointed out by German producers that the loss for this quarter will considerably affect German production costs, while the French production costs will be similarly reduced. Consequently, German producers object to continuing in the cartel under such conditions and modification of the agreement is urged. It is suggested in some quarters that for the present, as German mills are well filled with domestic business, a situation expected to continue for several months, that Germany agree to withdraw to a great extent from export selling in return for an additional 1,000,000 tons a year on the German quota.

It has been proposed in Germany that separate international sales syndicates should be formed to control semi-finished steel, structural material, wire rods, sheets and possibly bars. It is suggested that this would probably influence Britain to join the cartel. The principal difficulty is that complete national syndicates governing these products do not yet exist in France and Belgium. However, negotiations will be resumed shortly for the formation of an international wire rod syndicate to include Germany, France, Belgium and Luxemburg. Among wire makers, German, Belgian, Czechoslovakian and Netherlands wire mills have reached an agreement to make the present loose price understanding more definite and to establish export quotas. Negotiations were recently held for the es-

tablishment of an international syndicate to control ferrosilicon, which would include all European producers. Here also, the intention was restriction of output and the fixing of export quotas.

In Germany, the screw association has been reorganized as a price controlling syndicate, which will also establish quotas for the domestic market.

The Vereinigte Stahlwerke A. G. (United Steel Works) has finally merged into a single corporation the three companies which composed the Rhine-Elbe Union, the Deutsche Luxemburg, Gelsenkirchen Bergwerks A. G. and the Bochum Steel Co. A further effort is under way to include in this merger the Phoenix and Van der Zypen companies.

## JAPAN BUYS RAILS

### South Manchuria and Government Railroads Place Orders in France

NEW YORK, March 8.—Export business continues limited to small lots from South American markets and Cuba, with Japanese purchases largely confined to the large companies. Probably the outstanding purchases for Japan are the two tonnages of rails, awarded by the South Manchurian Railway Co., Dairen, Manchuria, and the Imperial Government Railways, Tokio, Japan. The 30 miles of 100-lb. rails for the South Manchurian Railway Co. were placed through the Mitsubishi Shoji Kaisha with De Wendel & Co. in France. The French bid is reported to have been between \$37 and \$38 per ton, c.i.f. Japan, a little more than 50c. a ton less than the lowest American bid. The 8266 tons of 100-lb. sections for the Imperial Government Railways is also reported to have been placed with a French maker, Mitsui & Co. handling the business. Tie plates for the Government railroad contract, totaling about 300 tons, were placed with Suzuki & Co. and awarded to the leading export interest in the United States.

In addition to the railroad business placed by Japanese companies, the Imperial Government Railways has placed 115 tons of channels with an American mill and Yokohama municipality has closed on 266 tons of I-beams with a maker in the United States. Among current inquiries from Japan are two tin plate tonnages, 14,000 base boxes of oil can sizes for the Ogura Oil Co. and 2000 base boxes of crown cork tin plate for the Nippon Beer & Mineral Water Co.

According to David Coupar, Kobe, Japan, representative of A. Cameron & Co. of London, exporters, Japanese steel mills, particularly such sheet producers as the Kawasaki Dockyard Co., encounter considerable difficulty in hiring labor physically strong enough to stand the heavy work required. It is often necessary to transfer men to lighter work after a short period of labor in the rolling mill department. Mr. Coupar is returning to Kobe, following a business trip to the main office of his company in England.

## Control of Sales and Prices by Cartel Urged in Germany

HAMBURG, GERMANY, Feb. 19.—A steel man, prominent in the German Raw Steel Syndicate and the United Steel Works, who was recently interviewed by a representative of THE IRON AGE, says that, while German mills are decidedly dissatisfied with the present situation in the International Raw Steel Cartel, many of the rumors in circulation are without foundation. The present disastrous struggle in the steel industry is resulting in great losses, as export prices have tended downward to the level existing prior to establishment of the cartel. Although Germany has had to pay a rather large total of fines for overproduction in the last quarter of 1926, the present dissatisfaction is caused less by the fines than by the fact that the primary purpose of the cartel, stabilization of prices, has not been realized.

Today, Germany cannot compete successfully with the western countries of Europe. Wages and taxes



are higher and inland freight rates are about four times the freight rates in Belgium. Consequently, Germany must sell for export at prices about 20 per cent lower than the level of last October with production costs higher and the recent fine payment to be considered.

As a result of this condition, he said, German mills will probably insist upon one of three alternatives. One suggestion is a cartel-managed international sales office, which would be empowered to regulate prices. To this proposal, the French mills seem to be agreeable. Under this arrangement orders would be distributed according to fixed quotas. Should this be unacceptable, an alternative proposition is the establishment of quotas on separate products, based on the present allotments. Both these suggestions failing, Germany must demand an increase in the quota. The first suggestion, that of an international sales office and export price regulation, seems to have the greatest German support.

In addition, he said, Germany will do her utmost to bring Britain into the cartel and it is hoped that this will occur sooner than is expected.

## MACHINERY INTO ITALY

### Germany Supplies Almost Half the Total Imports—United States, One-Eighth

WASHINGTON, March 8.—The long depression under which Italian industry has labored since the war was halted shortly before the middle of 1922, and a period of economic recovery set in, according to a report received by the Department of Commerce from Assistant Commercial Attaché Osborne, Rome. Machinery imports for 1923 were larger than those for 1922, those for 1924 were larger still, and imports for 1925 exceeded those for 1924.

In the summer of 1925, however, the peak of the movement was reached and business activity has since decreased in greater or less degree in practically all branches of Italian industry. By the summer of 1926 this decline became pronounced and was reflected in a sharp decrease in machinery imports during the period of July to September, 1926.

Returns for the first nine months of 1926 show that, in point of value, Germany supplied 45 per cent of the machinery imports, Great Britain 13 per cent, the United States 13 per cent, France 10 per cent and Switzerland 8 per cent. A comparison with the corresponding period of 1925 indicates that Germany has increased its participation 5 per cent, in the face of a 4 per cent decline on the part of Great Britain, while those of the United States and Switzerland have remained practically stationary.

## World's Shipbuilding Is Still Depressed

Further depression in world shipbuilding is reflected by the returns for 1926, according to the transportation division, Department of Commerce. On Dec. 31, 1926, there were being built in the shipyards of the world only 1,909,000 gross tons of steel steamers and motorships. This total represents a decrease of 137,000 tons, or 6.7 per cent, from the shipping under construction a year earlier and a fall of 541,000 tons, or 22.1 per cent, from that being built on Dec. 31, 1924. Compared with the pre-war figures for June 30, 1914, the current total shows a decrease of 1,254,000 tons, or 39.7 per cent.

Returns for particular countries show that the year's decline affected most seriously Great Britain and Ireland and Italy. In the latter country there was a drop of 69,000 tons, or 22.5 per cent, and in Great Britain and Ireland one of 122,000 tons, or 14 per cent. Exceptions to the declines in most countries were noted in the United States, with an increase of 52,000 tons, or more than 55 per cent, and in Russia with an advance from zero to 53,000 tons. Interest in the motorship has continued and about 47 per cent of all tonnage under construction was of this type.

## NEW MANGANESE ORE MINES

### American Capital Forms Company in South Africa to Develop Resources Estimated at 1,000,000,000 Tons of High Grade Ore

PIETERMARITZBURG, SOUTH AFRICA, Feb. 15.—An American company, known as the Union Manganese Co., Ltd., East London, South Africa, has purchased all farms in the Postmasburg district, where manganese ore has been found in quantities. The ore resources of this district are estimated at 1,000,000,000 tons. Much of this ore has analyzed 40 to 58 per cent manganese, 3.25 to 10.9 per cent iron, 1.75 to 7 per cent silicon and no phosphorus. It is of unusually dense structure and for the tests made, a workman with a hammer required an entire shift to drive a 15-in. hole.

The new company will construct its own railroad from Koopmansfontein to the nearest port, Buffalo Harbor or East London. The Colonial administration will operate the railroad for its owners, carrying any freight available. It is planned to ship a minimum of about 200,000 tons of ore a year. The cost of transportation to the port is estimated at ½c. per ton mile and the total cost of the product, hauled to the port, at about 12s. 6d. (\$3.03) per ton. Special handling and storage facilities are planned for the port of shipment. Should slightly more than the minimum shipments be made, 40 steamships of about 6000 tons capacity would depart from East London each year.

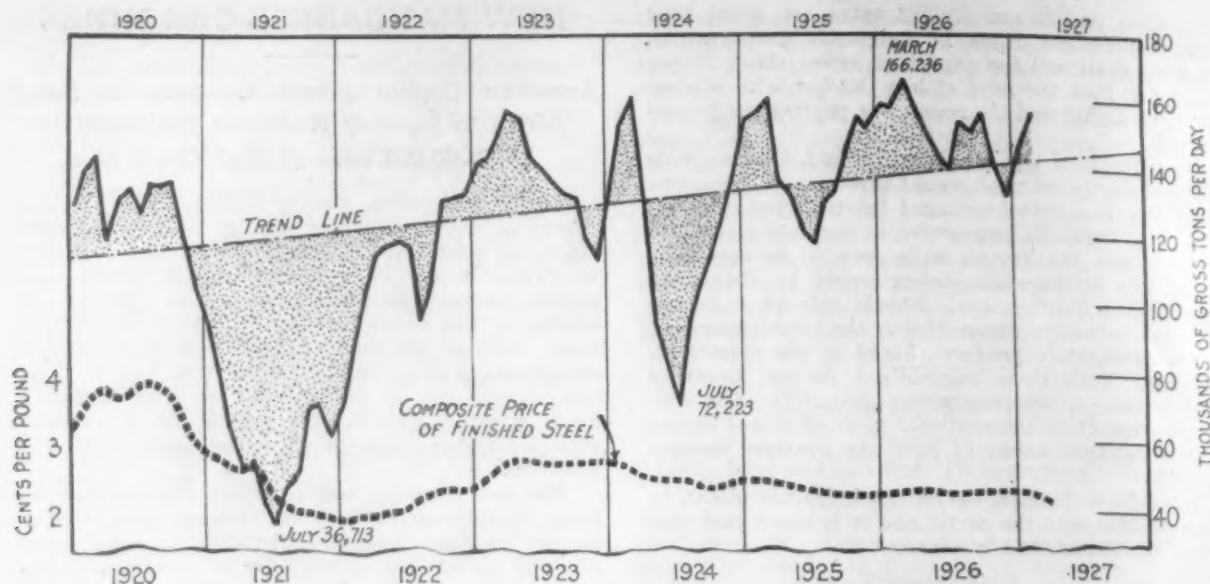
## More Machine Tools Exported in January

WASHINGTON, March 5.—Power-driven machine tools to the number of 628, valued at \$754,515, were exported in January, 1927, as against 416, valued at \$661,072 in December of last year. A large gain was made in the value of engine lathes exported in January. There were 36 sent abroad, valued at \$116,374, compared with 32, valued at \$56,890, in December. Decreases were shown in exports of turret and other lathes in January, as well as in the value of exports of vertical boring mills and of thread-cutting and automatic screw machines. Substantial gains were made in exports of milling machines and of shapers and slotters.

### Exports of Power-Driven Metal-Working Machinery

	January, 1927		December, 1926	
	No.	Value	No.	Value
Engine lathes .....	36	\$116,374	32	\$56,890
Turret lathes .....	8	14,354	17	23,399
Other lathes .....	21	53,619	47	54,878
Vertical boring mills and chucking machines .....	9	24,725	17	54,067
Thread cutting and automatic screw machines .....	84	78,244	81	90,727
Knee and column type milling machines .....	26	42,206	15	23,751
Other milling machines .....	28	65,908	38	42,066
Gear-cutting machines .....	21	34,327	10	43,094
Vertical drilling machines .....	23	20,304	9	24,707
Radial drilling machines .....	7	17,896	6	18,655
Sensitive drilling machines .....	31	2,660	5	2,463
Other drilling machines .....	25	9,425	25	23,108
Shapers and slotters .....	39	50,801	11	11,485
Planers .....	3	1,839	3	2,195
External cylindrical grinding machines .....	171	139,851	43	105,532
Internal grinding machines .....	21	52,323	30	50,292
Metal-working tool sharpening machines .....	76	29,090	47	24,773
Total .....	628	\$754,515	416	\$661,072

The fourth annual convention of the National Association of Foremen will be held at Cincinnati on March 21, the principal subject for discussion being "The Foreman as a Business Manager of His Department." E. H. Tingley, 1249 U. B. Building, Dayton, Ohio, is secretary of the organization.



Production of Steel Ingots in February Increased Again and Advanced Still Further Above the Line Representing the Trend of Consumption

## Ingot Output Gains Again in February

Daily Rate 8813 Tons or 6 Per Cent Larger Than in January

—Operations Less Than in February, Last Year

A SHARP increase in steel ingot production took place in February. At 3,725,577 gross tons or 155,232 tons per day, the increase over January was 8813 tons per day or about 6 per cent, according to data compiled by the American Iron and Steel Institute. In February, last year, the daily rate was 158,407 tons or 3175 tons larger than for February, this year.

The statistics show that the February production of the companies which made 94.50 per cent of the country's total in 1925 was 3,520,670 tons. Assuming that the 5.50 per cent not reporting produced at the same rate, a total February output is indicated of 3,725,577 tons from which a daily rate of 155,232 tons was calculated, allowing for 24 working days. According to the estimates of the institute, February operations were 86.45 per cent of "theoretical" capacity, compared with 81.54 per cent in January, 74.37 per cent in

December, 79.73 per cent in November and 87.66 per cent in October. For the two months of this year the percentage of operations has been 83.90 per cent, as compared with 88.57 per cent for the same two months last year. The average operating rate for 1926 was 84.40 per cent with 79.05 per cent the average for 1925.

The table gives the reported production by months of the different kinds of steel, together with the estimated daily rate for all companies.

### Increase in Pig Iron Duty Not Applicable to Spiegeleisen

WASHINGTON, March 8.—The article in THE IRON AGE of March 3, page 661, regarding the Presidential proclamation increasing the duty on pig iron stated that the higher rate became effective at once. This is an error. Under the terms of the flexible provisions (section 315) it is provided that the new duty shall become effective 30 days after the proclamation. The increase applies to pig iron and kentledge (permanent pig iron ballast) but does not apply to spiegeleisen, it was stated at the Tariff Commission offices.

### Consumption and Stocking of Coal

January consumption of coal in industries is reported by the National Association of Purchasing Agents to have amounted to 44,671,000 tons, a slight decrease. The supply on hand Feb. 1 is reported, on the basis of a survey, at 57,450,000 tons, or an average supply for 40 days. Production during January is given as 56,368,000 tons of bituminous coal and 6,760,000 tons of anthracite.

Attention is called in the report to a communal interest which has been aroused among mine owners in the central competitive field, because of the rapid growth of non-union production. "Their differences of opinion seem to have been subjugated by the realization that non-union competition is no longer a theory, but a very potent factor in the coal market."

Production of Steel Ingots  
(Gross Tons)

Months	Reported by companies Which Made 94.50 Per Cent of the Steel Ingot Production in 1925			Calcu- lated Monthly Production	Approx- imate Daily Production
	Open- Hearth	Bessemer	All Other		
1927					
Jan.	3,041,233	545,690	10,586	3,806,888	146,419
Feb.	2,942,232	565,201	13,237	3,725,577	155,232
2 Mos.	5,983,465	1,110,891	23,823	7,532,465	150,649
1926					
Jan.	3,326,846	581,683	13,664	4,150,469	159,633
Feb.	3,023,829	556,031	12,818	3,801,776	158,407
2 Mos.	6,350,675	1,137,714	26,482	7,952,245	159,045
March	3,590,791	635,680	15,031	4,488,362	166,236
April	3,282,435	601,037	13,652	4,123,941	158,613
May	3,201,230	516,676	10,437	3,945,336	151,744
June	3,036,162	498,764	9,441	3,750,653	144,256
July	2,911,375	526,500	12,372	3,651,055	140,425
Aug.	3,145,055	627,273	12,003	4,004,583	154,022
Sept.	3,089,240	612,588	12,660	3,930,675	151,180
Oct.	3,224,584	630,526	12,348	4,092,548	157,406
Nov.	2,915,558	592,239	9,605	3,722,119	143,158
Dec.	2,778,949	493,172	8,919	3,472,000	133,538
Total	37,526,054	6,872,169	142,950	47,133,517	151,555



# In This Issue

*Formerly paid \$75,000 annually to get rid of slag; now sells it for \$30,000.—Donner produces a marketable slag by keeping the silica content below the danger line (50 per cent), and by slow cooling.—Page 721.*

*Cuts rolling mill power cost in half by installing motor drive.—The change was made without altering the mills themselves, demonstrating that electrical driving equipment can be installed without handicapping any mill equipment which may be purchased in the future.—Page 712.*

*Will our export business suffer because of the heavy concentration of gold in this country?—We must expect to buy at least as much from other nations as we sell to them. Otherwise the concentration of gold here will prevent other countries from buying from us.—Page 709.*

*Double heat treatment of nickel-steel castings produces great ductility.—The first treatment is at 1700 to 1800 deg. Fahr., and the second, at 1400 to 1450 deg.—Page 704.*

*Do not handicap a new machine by paying the operator an unearned bonus for high production.—Some manufacturers make the mistake of saddling a production bonus on a new tool, without first ascertaining whether the operator or the tool itself is entitled to credit for the higher output.—Page 714.*

*High production does not always mean low costs.—Increased spoilage, high repair bills and greater accident liability sometimes offset the advantages of larger output.—Page 714.*

*"Thirteen-month" year simplifies cost-finding.—Dividing the year into 13 four-week periods enables steel manufacturer to apply selling costs, rents, etc., against tonnage produced, without bother of allowing for varying lengths of calendar months.—Page 712.*

*Large number of automobile manufacturers are producing on a capacity basis.—February was better than a year ago, except for Ford.—Page 712.*

*Finds ductility, rather than tensile strength, the secret of producing long-lived locomotive frames.—Low-carbon nickel steel gives the best results.—Page 703.*

*Aluminum-silicon alloys are well adapted for producing thin-walled castings.—The metal is very fluid in its liquid state and will flow freely in the mold. When it cools it is tough and will not crack.—Page 704.*

*Finds German industry more efficient than before the war.—Great advances have been made in mass production. Specialization and standardization are being given close attention, and machinery is steadily replacing man-power.—Page 707.*

*Sharp competition in malleable iron industry is forcing high-cost plants to the wall.—Current prices apparently are too low for fair returns. Little hope is held for improvement until existing over-capacity is reduced.—Page 733.*

*Says hand-to-mouth buying raises cost of production and distribution.—Mail order man predicts the time will come when there will be a more equitable distribution of costs between buyer and seller.—Page 735.*

*Super-duralumin alloy has tensile strength greater than mild steel.—Tests 75,000 lb. per sq. in.—Page 704.*

*Plan to limit losses and profits on future wartime contracts.—In case of loss through miscalculating costs, adjustment would be made to permit a profit of 1 per cent.—Page 731.*

*Are our foreign loans encouraging merchandise imports?—With private loans abroad now exceeding ten billion dollars, there may be a serious disturbance in exchange rates when repayment is attempted, if debts are not met with merchandise.—Page 734.*

*Steel output increased sharply in February.—Though daily rate of ingot production (155,232 gross tons) was a gain of 6 per cent over January, it was below February, 1926.—Page 726.*

*Open-hearth furnace with three uptakes produces four 25-ton heats in 24 hr.—Efficient distribution of superheat induces speedy and uniform melting of the charges.—Page 715.*

# CONTENTS

March 10, 1927

Making Locomotives Stronger .....	701
Germany's Exports Diversified .....	705
Electrification of Phoenix Mills .....	710
Lower Costs Asked of the Foreman .....	713
National Industrial Mobilization .....	730
Large Gain in February Iron Output .....	736

Aluminum and Its Alloys .....	704
India Reduces Costs of Making Pig Iron and Steel .....	708
Too Much Plant Capacity .....	709
Danish and American Foundry Practice .....	709
Steel Company Divides Year Into Thir- teen Periods .....	712
Automobile Output Shows Gain .....	712
Open-Hearth End Ports .....	715
Plant of the Compañia Siderurgica del Mediterraneo .....	717
Fuels, Coke and Furnace Slags .....	721
New Discounts on Bolts and Nuts .....	722
Machinery Shipped Into Italy .....	725
New Manganese Ore Mines .....	725
Ingot Output Gains Again in February .....	726
Consumption and Stocking of Coal .....	726
Says Country Has Reached "New Normal" .....	729
Metals Used in Radio Sets .....	735
Prices on Steel Windows Reduced .....	735
To Cooperate in Mineral Research .....	754
Industrial Finances .....	768

## MEETINGS

Society of Industrial Engineers .....	719
Iron League of New Jersey .....	720
Eastern States Blast Furnace and Coke Oven Association .....	721
National Metal Trades Association .....	721, 722
Sectional Engineering Meetings .....	729

## NEW EQUIPMENT

Machine for Drilling Steel Rails .....	718
Comparator for Checking Internal Diame- ter of Small Rings .....	718
Automatic Machine for Removing Cut- off Burrs from Cap Screws .....	719
Hole Saw for Portable Electric Drill .....	719
Adds Geared and Combination Geared Machines to Inclined Press Line .....	720
Liquid Level Gage .....	720

## STATISTICAL

Gain in Sales of Foundry Equipment .....	719
World's Shipbuilding Is Still Depressed .....	725
Machine Tools Exported in January .....	725
Ingot Output in February .....	726
Reduced Employment in Steel Works .....	729

## DEPARTMENTS

European Steel Markets .....	723
Editorial .....	732
Iron and Steel Markets .....	738
Comparison of Prices .....	739
Prices, Raw and Finished Products .....	741-743
Structural Awards and Projects .....	755
Railroad Equipment Buying .....	755
Non-Ferrous Metals .....	756
Reinforcing Steel Business .....	757
Personals .....	758
Obituary .....	759
Machinery Markets .....	760

## Improving Coke Plant Performance

SEVERAL reasons are back of the attempt in different quarters to get away from quenching by-product coke through deluging it with water. Conservation of the heat in the coke, elimination of rust and other troubles through deposit of the moisture liberated by water quenching, avoidance of complaint from adjacent property holders, improvement in the quality and useful quantity of the coke, and reduction in the amount of braize, all have their place in the program.

Two articles developed by THE IRON AGE from two different means of attacking this problem are presented to our readers. One article, based on a Swiss design, appeared at page 425 of our issue for Feb. 10. An American design for attaining the same end will shortly appear. In both cases the released heat is used to evaporate water in boilers. The details of the methods employed, however, are widely different. Both furnish worthwhile suggestions to operators of by-product coke plants, whether in the steel industry or elsewhere.

*For News Summary See Reverse Side*



## Rainey Mine and Coke Ovens at Elm Grove Abandoned

Operation of the Elm Grove coke ovens in the lower Connellsville district, which are owned by W. J. Rainey, Inc., 52 Vanderbilt Avenue, New York, will be permanently discontinued about April 1, as a result of exhaustion of the coal mine at Elm Grove. The 100 ovens have produced all the foundry coke made by the company. The remaining coal will be mined until about Aug. 1.

Recently W. J. Rainey, Inc., acquired from W. J. Parshall of Uniontown, the Old Home mine in the Connellsville district, at which there are 100 ovens, 70 of which are in operation at present. Coke from this operation is machine drawn, but the Rainey interests are considering changing the production at some future time to hand drawn foundry coke, now that the Elm Grove mine is exhausted.

## New York Steel Treaters to Hold Annual Smoker

The annual smoker, to which members of the New York chapter of the American Society for Steel Treating eagerly look forward to each year, will be held Monday evening, March 14, at the Hotel McAlpin. This will be the fourth occasion of the kind. A dinner will precede the entertainment, which is in the hands of the same director who has had charge of it for the past two years. Attendance of members from other nearby chapters, as well as possibly some of the national officers, is expected.

## Sectional Engineering Meetings

Forthcoming meetings of the American Society of Mechanical Engineers include a large number of sectional meetings, together with the annual spring meeting at White Sulphur Springs, W. Va., May 23-26, and a power problem meeting at Kansas City, April 4-6, involving a symposium dealing with design and operation of several of the newer power stations near Kansas City.

The Chicago section will hold its spring machine shop practice meeting on March 16. A motion picture will show the manufacture of Elgin watches. There will be several papers. Other meetings include:

March 9.—At the Detroit Engineering Society Clubhouse, 8 p. m., Prof. H. W. Miller, University of Michigan, will speak on the cold forging of steel.

March 9.—Engineering Societies Building, New York, 8 p. m., joint meeting of the Management Division with the Taylor Society. Morris L. Cooke, consulting engineer, Philadelphia, and president Taylor Society, will speak on morale as a factor in time study technique. A simultaneous meeting of the Hydraulic Division will have two papers.

March 10.—Clermont, Fla., joint meeting with Florida Engineering Society. Calvin W. Rice will talk on Engineering in South America, with lantern slides and motion pictures.

March 14.—Engineers' Club, Baltimore, 8.15 p. m., W. S. Taylor, La Mothe Chemical Products Co., will talk on "Hydrogen-Iron Control in Industrial Processes."

March 15.—Hotel Statler, Buffalo, 8 p. m. A new railroad central station for Buffalo will be discussed by several speakers. The meeting will be in conjunction with the American Welding Society and the American Society of Civil Engineers.

March 18.—Engineering Societies Building, New York, 8 p. m. Joint meeting with Civil Engineers and Electrical Engineers. Several speakers will discuss the planning and construction of the Holland vehicular tunnel.

March 22.—Engineers' Club, Philadelphia, 7 p. m. F. E. Barrows will discuss patents and engineering.

March 24.—University of Cincinnati, 8 p. m. Joint meeting with American Chemical Society, American Electrochemical Society, American Electroplaters Society and American Society for Steel Treating. Dr. William Blum, Bureau of Standards, Washington, will speak on applications of chromium plating.

## General Electric Rewards Its Employees for Outstanding Service

The General Electric Co., Schenectady, N. Y., has awarded to 27 of its employees Charles A. Coffin Foundation certificates of merit for outstanding services toward increasing the company's efficiency and progress in the last year. The certificate entitles the employee to four shares of General Electric common stock. Nine of the awards went to workmen; two, to foremen; eight, to engineers; five, to commercial men, and three, to administrative employees. Included among the recipients was Guy S. Purvis, construction engineer at Chicago, who did exceptionally valuable work in helping to place in operation a new type of reversing mill control in a steel mill, thereby reducing the time required for an operation of this kind from 19 days to six days.

## Verity Sees Country as Having Reached "New Normal"

"From the standpoint of wages, cost of living and the relation of consumption to production capacity, the United States seems to have reached what might well be termed a 'new normal,'" says George M. Verity, president American Rolling Mill Co., Middletown, Ohio, in the twenty-sixth annual report of that company. He characterizes this new normal as representing a standard of living in this country which the world has never seen before, and finds it to be largely the result of the remarkable industrial development of the nation during the last quarter century.

The report points out that the consumption of iron and steel sheets has increased approximately 53 per cent in the last five years, and that this increase in demand has not developed so largely where sheet metal was used heretofore as by the constant creation of new uses for these products. An example of this growth is cited in the development of electric and other forms of artificial refrigeration.

The company reports net sales for 1926 of \$35,392,968, compared with \$34,770,053 in 1925, and net profit from operations in 1926 of \$4,334,221.

## Reduced Employment in Steel Works

Returns from 212 iron and steel establishments are reported by the Bureau of Labor Statistics to show a reduction of 1.8 per cent in the number on payroll in January, as compared with December. The respective figures were 272,958 and 277,937. A still greater shrinkage occurred in the payroll aggregate, which fell from \$8,636,965 for one week in December to \$8,089,946 for the corresponding week in January. This reduction of 6.3 per cent indicates a decline of about 4.5 per cent in the average pay envelope.

A similar though somewhat less pronounced reduction in both employees and wages is reported from the foundries and machine shops. In 1961 establishments the number on payroll fell from 246,677 to 243,535, or 1.3 per cent. The week's payroll fell from \$7,426,626 to \$7,101,381, or 4.4 per cent. Here the average reduction in pay per week was about 3 per cent.

*Schedule of the next installments of the Business Analysis and Forecast, by Dr. Lewis H. Haney, Director, New York University Bureau of Business Research, follows: March 17—Activity in Steel-Consuming Industries; March 24—Position of Iron and Steel Producers; March 31—General Business Outlook.*

# National Industrial Mobilization

## Coordination of Government Planning with Manufacturing Preparedness, Designed to Save Lives, Waste and Confusion

BY WILLIAM STONEMAN LYHNE\*

**T**ODAY the Assistant Secretary of War is held responsible for the industrial mobilization of the nation, and a momentous task it is. He is charged by statute, and by Army Regulations, with supervising activities pertaining to procurement and planning for procurement of industrial, territorial and other facilities. Assurance of adequate provisions for mobilization of material and industrial organizations essential to war-time needs is up to him.

Reporting direct to the Assistant Secretary of War are the various chiefs of bureaus, such as Quartermaster, Ordnance, Air Service, etc., who work under his guidance and are responsible to him.

There is a division chief for each bureau, responsible for all matters pertaining to industrial war planning and the immediate adviser to the bureau chief on all such matters. The division chief's executive assistant is charged with the coordination of all activities of the division. To illustrate how this work is carried on, it is necessary to take some bureau for an example—say the Air Service.

### Regional Arrangement

**T**HE country is divided into six districts: New York, Dayton, Detroit, Chicago, Buffalo and San Francisco. Each of these districts has a district representative, to study its manufacturing resources.

Through chambers of commerce, reserve officers, or any other outside means, these officers study a factory, or rather a "facility," as known in army parlance. If, after due consideration, he deems the facility a desirable concern for his bureau, he submits a request that the Air Service be allocated that particular facility. Then the Facilities Section takes the matter up with other bureaus to see if they are interested. This information is sent to the Assistant Secretary of War, who decides whether or not the bureau requesting the facility in question is entitled to it.

Upon being notified that a plant is allocated to a certain branch, the district representative proceeds to make a survey of the place. If more than one branch is allocated this facility, the different bureaus get together and make a joint survey. Everything is done with the idea of preventing plant executives from being bothered by Army or Navy representatives conflicting or crossing paths in their survey. If the plant proves capable of meeting their particular requirements, they explain their proposed work and seek the firm's cooperation in working out factory plans for war-time productions of the goods they are expected to make.

### Production Schedules Based on Known Needs

**E**VERY bureau knows its requirements down to the smallest detail and production schedules are made according to the Chief of Staff's "mobilization speed," with knowledge of how rapidly men can be equipped. Thus every requirement is known for each month after "M" day, and material is thereafter delivered to meet the increasing needs of an expanding army. Everything is planned to attain maximum effort in 24 months;

anything beyond that would be mere repetition of the twenty-fourth month's requirement.

To compute the requirements in finished articles necessary to complete the Air Service industrial war plan, a requirements section has been set up. This is charged, also, with studies of computations of personnel, both commissioned personnel and civilian employees. Under this section also comes the supervision of the most important of all work, that of commodity studies, insofar as the Air Service is concerned. It is well to go into this vital work here and see how far reaching its work will be in the next war.

Commodity committees, made up of representatives from all supply branches of the army, are assigned certain definite items of strategic or critical commodities for consideration, such as steel, shellac, rubber, silk, nitrates, etc. Each supply branch using the item has a member on the committee; the branch using the most of it automatically has the chairmanship. Each committee must assemble, evaluate and collate all essential facts regarding its commodity. The committee's goal is to establish itself as the most reliable and authoritative source of knowledge on the supply of its commodity.

About 180 articles have been studied and 50 of these have been eliminated entirely. Of the remaining 130, only 52 are now considered vital, as substitutes have been found, or, in cases of stress, they can be produced in this country, although at higher cost than procured from the outside. It now appears that another year will narrow down these vital commodities to about 30. From that, it may be seen how great a service is being rendered the country by these various committees.

### Facilities and Planning Sections

**T**O obtain proper coordination with other supply branches with reference to requests for the allocation of various plants, there is a facilities section. It is through this section that the district representatives maintain a proper contact through the division chief with the office of the Assistant Secretary of War, in all matters pertaining to the allocation of facilities. They also make studies pertaining to, and supervision of, all matters concerning industrial surveys.

To maintain contact with the development of new Air Service equipment and to make studies for the development of manufacturing methods involved in the construction of equipment, there is the production planning section. This must be thoroughly familiar with the resources of the various facilities best fitted for any article to be made. This section computes the requirements in raw materials and component parts, also recommending to the chief of division the most suitable sources of supply for equipment. It also supplies the district offices with complete procurement data, so that each district can properly carry out its responsibility in connection with the industrial war plans.

### Contract Regulates Profits and Avoids Profiteers

**P**ERHAPS the most difficult and delicate question to settle has been to evolve a war-time contract acceptable to the War Department and manufacturers alike. Brigadier General Ruggles of the Ordnance Depart-

\*Captain, Air Service (Reserve), United States Army, Richmond, Va.



ment has prepared a form of contract which will undoubtedly be adopted. So vast and important has been this work, and the difficulties of acceptance raised, that it has been, and probably will be, impossible to satisfy all. One thing is certain, however—in the next war there will be little chance of profiteering. Harried tax payers will, for the first time, feel that, during the war, the Government is not being mulcted by unpatriotic profiteers.

Briefly stated, the plan is that manufacturers will make 5 per cent profit on their turnover. Should they find ways and means of saving the Government money after the order is being produced, they can get a percentage of this saving so as to make as high as 12½ per cent.

Should they find, after completing the order, they have badly misfigured, they will get less than the regular 5 per cent. Based on the amount they have lost, the Government will so adjust its figures that the minimum they can make is 1 per cent. It will be, therefore, the Government's policy to see that no concern goes broke working on War Department orders, and, at the same time, to limit them to reasonable profit, with suitable rewards in the form of increased profits to those concerns saving money for the War Department.

Firms which have to be equipped with machinery or buildings will not make so much profit as those already prepared. Financing has been given considerable attention. Organizations will not have to tie up a great deal of their capital in Government work, as it is planned to pay for material on War Department contracts as soon as they come into the plant.

#### Excessive Orders Left Heavy Surplus

**D**URING the past war, chiefs of bureaus had no figures on which to base the size of their orders. Also, there were many new branches established, such as the Air Service and Chemical Warfare. Rates of replacement were unknown, with the result that chiefs of bureaus were faced with the problem of buying too much or not enough. To buy too much was pardonable, but woe unto the department not having enough of a particular article. The result was that every one ordered with a good margin on the safe side of a shortage. Then, after the war, the Government had a tremendous stock of material on hand, which it must dispose of and thereby more or less upset certain lines of business.

Through the work of the Industrial War Planning Group, definite quantities needed are known. The rate of delivery per month has been figured out, together with the percentage of parts required for depreciation and replacements.

#### Special Training in Special Work

**S**OME materials which will be required are not made during peace time in a quantity to insure that plants will have facilities to get them out under war-time pressure. To overcome this, efforts are being made to place trial orders with firms for small quantities, so

that they can have the necessary jigs ready for an emergency and, in the meantime, have their personnel more or less educated to the specifications and requirements of the War Department. This will assist them also in laying out a definite factory production plan to meet the known schedule of the Government's requirements.

This country has an abundance of skilled labor with which to carry out its industrial war plans. In a few lines, such as airplane, parachute or special instrument manufacturing, the "educational orders" will train a nucleus of skilled workers, who can easily and quickly break in other skilled labor and insure rapid production to meet the needs of the War Department. Means are provided, also, so that skilled labor will not be upset by being drafted into the Army or Navy, but will serve where it will be of greatest value to the country. It might be well to note here that the skilled labor of Japan is only about 1 per cent of the total population.

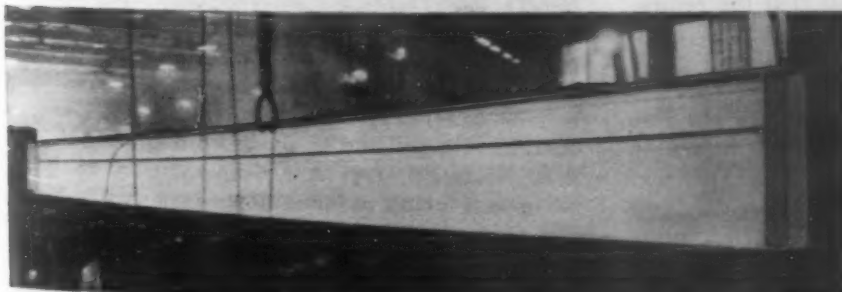
Special bills drawn up, and in proper shape for immediate action by Congress, will iron out difficulties that might present themselves under present legislation. These tentative laws are not being presented to the legislative bodies until war is imminent, simply because laws now enacted might be obsolete by the time they are needed. Then, again, some might be rather difficult to put through except under the patriotic stress of war.

#### Efforts to Interest Leading Executives

**T**HAT this work may be done correctly, the War Department is trying to enlist the services of business executives of large caliber in each district, to act in an advisory capacity, check over plans and give such information as may be necessary. During peace times such men are hard to get, owing to their tremendous absorption in their own business, and their work often takes them away from their districts or abroad. But such a man, familiar in peace times with War Department plans, would be of incalculable value during a war. Best of all, he would be able to act immediately and not have to spend considerable valuable time familiarizing himself with the needs and ways of the Government.

Our nation is too wealthy, and our people envied too much, for us to neglect any opportunity we might have to assure our perpetuation. One of the best means we have, that can be carried out with the limited funds available to our War Department, is to perfect our Industrial Mobilization, so we can take an aggressive stand against any enemies in the minimum amount of time possible.

Industrial war planning pays tremendous profits, for it means that the Government will obtain what it wants, when it needs it and without excess purchases, at non-profiteering prices. If the World War were to be fought over again today, its cost would be several billion dollars less. Best of all, thousands of lives may be saved by having men properly equipped, on time.



**T**HE plate girder pictured here, made by the Macomber Steel Co., Canton, Ohio, was fabricated by the use of electric arc welding. It has a depth of 2 ft. 6½ in., a length of 50 ft. 8 in. and was built up from a 30 x ¾-in. web plate, four 5 x 3 x ¼-in. flange angles, two 4 x 3 x ¼-in. shelf angles running the length of the girder and two 5 x 3 x ¼-in. angle stiffeners at each end.

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# THE IRON AGE

A. I. FINDLEY, *Editor*

W. W. MACON, *Managing Editor*

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## The World's Future in Iron

WORLD iron and steel consumption has not increased since just before the war at the pace previously shown. There was in fact a decrease and then a partial recovery. The war is generally assigned as the cause. The fundamental question, however, is whether in the long run the war will be found to have prevented, or merely to have retarded, expansion; in other words, whether the next few years may not show an accelerated pace.

Sir William Larke, director of the National Federation of Iron and Steel Manufacturers, quoted in the *Iron and Coal Trades Review* as delivering an address at Birmingham, England, points out that pig iron is the basic measure of iron and steel, and that from 1810 to 1910 the world's production of pig iron increased at a general rate of 60 per cent per decade. There were some extreme variations, decade by decade, explainable by special conditions. In the last decade of the period, 1900 to 1910, the increase was 62 per cent, while the 20 per cent increase 1910 to 1913 was in conformity with the 60 per cent rate per decade.

Extrapolating, the 60 per cent rule called for 137,000,000 tons of pig iron for 1925, whereas there was only 76,000,000 tons. Making all allowances for the dangers of extrapolation, however, Sir William insisted the discrepancy was too great, the deficiency being 45 per cent.

The retarding influence of the war was chiefly by derangement of commerce. The war brought new devices and methods, and aroused courage to try things. It is quite conceivable that the retarding influences would affect chiefly the past eight years, while the accelerating influences will affect the years immediately before us.

Application of the rule of increase in pig iron has not been in favor in the United States in recent years, for in the years just before the war it was becoming evident that Abram Hewitt's "rule of doubling" per decade had been breaking down. But ours was the case of only one country. Our 100 per cent rate against the world's 60 per cent rate was due partly to our particular needs, and

partly to the fact that we swung from importing to exporting. In 1871 we imported 1,142,000 tons of iron and steel while we made 1,706,793 tons of pig iron. We eliminated our imports, but we could not go on the same way, increasing exports.

The world at large is another matter. It has many countries in need of the development the United States has had. They may seem old, but they are new industrially.

If the world's iron consumption now turns in to increase rapidly in the next few years, to make up in part for its recent lack of progress, it does not follow that the United States will be a large contributor to the increment. The typical process is for a country or a district to start by consuming imported material and eventually to make the material. That is what the United States has done, and our experience shows more than that, for within our own borders the same thing has occurred. The South consumed iron and then turned in to make it. More recently the Northwest has done the same, with its Duluth plant, while a recent daily newspaper story sets forth the prospects of Montana. It is a province of the older countries or districts to give the newer regions their start by supplying the materials for a time.

## Unwisdom of a Coal Strike

WHILE the bituminous coal operators and miners failed to come to agreement in respect to the wage scale after April 1, apparently the miners' leaders are not actively fomenting a strike. In this wisdom is undoubtedly better than valor. A great accumulation of bituminous coal is in stock. About five-eighths of all of our soft coal production is now coming from non-union mines. The production of petroleum is bountiful and the price for it is relatively low. American industry could get along comfortably for a long time without any coal from the union mines. Consequently, a strike would condemn their workers to a long period of idleness, with every prospect of defeat in the end and further decadence of the union. The last is a



feature to which the labor leaders have probably given much thought.

The evils affecting the bituminous coal mining industry have been in the way of curing themselves, agreeably or not, which generally happens, given time enough. No industry could continue indefinitely to support a superfluous personnel. Sooner or later the workers, who are simply interested in earning their living, were bound to see the fallacy of a high rate of wage that could be enjoyed only for a few days per week at the best, and often not at all. These men naturally drift to non-union districts, or accept the principle of the open shop, or enter into other work, for which in this great country there is constant opportunity.

The recent history of the bituminous coal mining industry illustrates again that labor unions cannot control wages unless they can acquire restrictive rights—by legislation, as in the anthracite mining industry, or by artificial limitation, as in the building industries of our big cities. Even so, there must be a seller's market for the products.

The principle of the open shop is not at odds with a proper participation of labor in the produce of industry. The workers in the iron and steel industry are notoriously no sufferers. In many other industries operators like to pay high wages for the sake of getting good work. It is a great economic truth that the worker gets what he earns. There may be temporary maladjustments, but not for very long will he get either more or less. It may well be questioned, in view of the favorable position of workers throughout American industry, whether our labor unions serve anything like their good purpose of former years. They may have a beneficial psychologic effect upon the class-conscious worker, but in respect to wages they do not help him any unless they be fortified by economic restrictions, which are usually contrary to the interests of the body politic.

### The Malleable Foundry's Problem

COMPLAINTS of unprofitable prices and excess producing capacity, conditions that often go hand in hand, are common in various branches of the iron and steel industry, but in none more so than in that of malleable castings. The malleable industry, moreover, has had its internal problem increased by the extent to which steel stampings and in some cases steel castings have been offered in the place of malleable castings. It is true that there has been some substitution of other products for malleable castings, particularly in the railroad and the automotive field; but there have been at the same time extensions of the uses of malleables, indicating that the industry has fairly held its own. This is indicated by the Department of Commerce figures as published month by month.

That our malleable foundries can produce more than the market will absorb is generally admitted. Some of the smaller companies that are unable to show profits evidently do not see brighter days ahead and would be glad to dispose of their plants at buyers' prices. However, the industry is going through an evolution which is likely to eliminate some of the high-cost plants, particularly smaller

foundries that cannot make a profit with the present range of prices.

Leaders in the malleable industry are paying more attention than ever before to the reduction of costs. Gray iron foundries on a large production basis, particularly in the automotive field, have led the way with the installation of conveyors and other labor-saving equipment that have economized in labor. Current prices on malleable castings apparently are too low for fair returns after depreciation, and they bear hard on some foundries that have not the last word in equipment. However, the industry sees little prospect of getting better prices with the existing over-capacity. Perhaps some of the malleable makers would do better to stop complaining of low prices and concentrate to getting costs down.

The automotive industry is now buying malleable castings as low as 4¾ cents per lb. and one foundry that is getting 5 cents a lb. for motor car castings claims that it is making a profit at that price. As malleable castings compete directly with other products, the price factors will go far in determining the extent of their use. At present prices they even come in close range with gray iron castings. Recently a buyer asked for prices on a 40-lb. casting. A malleable foundry submitted a change in design, making a somewhat lighter section than required in gray iron, so that it reduced the weight 8 per cent and quoted a lower piece price than was named by a gray iron foundry.

With lower costs as the keynote of the industry, the outlook is naturally better for the large than for the small foundries. Foundry practices may be as far advanced in many of the smaller foundries as in the larger ones, but the latter have the advantage of already having or of being better able to install conveying and other mechanical equipment. It is evident, however, that not all malleable foundrymen are realizing the inevitable trend of their industry toward lower production costs, for one large Central Western foundry recently shut down with the announcement that it would not resume until malleable castings brought better prices. Not having modernized its plant, this producer has high production costs.

Smaller malleable foundries that are not now operating profitably are face to face with the re-vamping of their plants so as to bring their costs down. But the problem is not simple. Mechanical handling equipment is expensive and some of these foundries are not strong enough to put any considerable amount of new capital into reequipment.

MUCH has accumulated in the past few years to the credit of duralumin. Now comes the announcement by an authority in the aluminum alloy field of a super-duralumin with tensile strength running up to 75,000 lb. per square inch. The news emphasizes the growing importance of these high-strength light alloys and the role they are to play in engineering. Such strength approaches that of various higher carbon and alloy steels. It is probably attained in this latest product by a slight modification in composition, particularly in combination with a new heat treatment. Which suggests that in the non-ferrous field methods

of heat treatment are fast gaining an importance comparable with the place they have taken in all the latter day development of high-quality steels.

### Alloy Steels and Stronger Locomotives

FIFTEEN years ago one of the first articles on alloy cast steel locomotive engine frames appeared in THE IRON AGE, the practice at that time dealing chiefly with carbon and vanadium steels for such castings. On other pages in this issue some of the latest developments in this important field are presented.

The contrast between practice then and now is striking in at least two respects. As the demands upon the locomotive have grown, the tendency has been toward greater weight. There being a limit to the weight, a lighter and yet stronger metal in various parts has been a necessity. In recent years new combinations of alloys together with a change in the carbon content have appeared, the idea being to obtain a composition which would meet the various kinds of strains to which such a ponderous machine is subject. The experience of the Canadian Pacific engineers in experimenting with and developing such steels is interesting history, indicating both a great advance and greater possibilities.

The progress in heat treatment is the most notable feature. In the earlier days double heat treatment for castings was unknown. Simple annealing was the only practice and this was often poorly carried out, even on such castings as locomotive frames. The article of this week brings out clearly the contribution of heat treatment and the near approach made to ideal structures and physical properties. Such results with special alloy steels were not thought possible fifteen years ago.

The present day designer of locomotives is turning more and more to alloy steels to solve his complicated problems, not only for castings but for boiler plates, accomplishing the double end of reduced weight with no sacrifice in strength.

### Multiplicity of Patent Claims

CONGRESS at the session just ended passed an act intended to discourage the multiplying of claims in patent papers and a new practice becomes operative April 15. At present there is a flat fee of \$20 for filing a patent claim and a second fee of like amount when the patent is issued. Hereafter the minimum fee in either case will be \$20 and an additional fee of \$1 will be charged for each claim in excess of twenty. Therefore each claim that finally appears in the issued patent in excess of the prescribed number will cost the patentee \$2.

The bill became a law before most of the patent lawyers and solicitors were aware that such a change was contemplated. No fuss was made about it, and it had the unusual good fortune of arousing enough interest to procure its passage, but not enough to cause discussion in committee or on the floor.

The practice of putting in long lists of claims, many of which have no real meaning or value, is a common one. Some inventors insist upon numbers, magnifying their importance. Some attorneys also believe in going into great detail in protecting in-

ventions. Now the Patent Office expects to have its work expedited to some extent by simplification of applications. Where the additional fee proves no deterrent, then the income of the office will be increased.

Attorneys are hurrying to get long applications filed before the new law becomes effective. Claims already in will not bear the new burden until patents are issued on them.

### Our Merchandise Trade Balance

MERCHANDISE exports of the United States in 1926 exceeded imports by only \$377,575,000, making with one exception, that of 1923, the smallest favorable trade balance for any calendar year since 1914. The general theory for these post-war times is that our loans abroad and our exports of merchandise constitute two balancing factors, on opposite sides of the international ledger. On the debit side are, besides these foreign loans, chiefly our merchandise imports, services to American tourists and remittances of immigrants in the United States to relatives and friends abroad. On the credit side are merchandise exports, interest and dividends on foreign securities held in the United States, and similar items. Many items in the total of a year's trade appear on both sides, such as ocean freights, monthly movement of gold and silver into and out of the country, etc., there being no large net balance in any one of these.

Few of the authorities, probably, would be willing to allow themselves to be pinned down to the precise statement that these items, our loans abroad and our merchandise exports, are balancing items, but that is essentially the view. The point is that the other items entering the international balance sheet are relatively fixed in character. Something has to do the balancing, and the items mentioned are the most susceptible. That is, for the long range. Week to week or month to month requirements are met by gold movement, but not enough gold could move for a long range settlement.

The ordinary ledger account as we know it has only one balancing item, all other items being regarded as fixed. Here there are two. There is an interdependence, for neither item is definitely fixed. It cannot be claimed positively that our merchandise exports bring about our loans abroad, nor in turn that our loans abroad are the direct cause of the exports.

There are those, however, who maintain that our continued loaning abroad must result eventually in much heavier imports of merchandise, or if the merchandise refuses to come in, then a very serious strain by dangerous gold imports and disturbance of exchange rates. Our private loans abroad some time ago passed the ten billion dollar mark, while the annual interest and dividends exceed half a billion dollars. Those who criticize the trend insist that the interest and dividend account will so increase that something new will have to occur.

The record up to date has been that it is our exports that have diminished, instead of our imports increasing. Our imports have increased only slightly. The merchandise balance was four billion in 1919, three billion in 1920 and two billion in 1921. Since then it has been under one billion, last



year's balance, as stated above, being \$377,575,000.

In the circumstances one would fancy that some of the predicted increase in imports would have occurred already. For this matter there is an interesting test, which one does not see employed. That test is applied by scrutinizing separately the free and dutiable imports. It is the theory of our tariff that things we must have for our work, and do not produce, are free, and things we may buy or not as we choose are dutiable. Accordingly one would expect adjustment would be made in dutiable imports. Last year these were \$1,577,415,000, almost precisely the same as for 1925 and just a trifle under the mean of 1919 and 1920. The free imports on the other hand have increased greatly, the \$2,853,475,000 of last year, being the largest with the single exception of 1920.

These free imports are not to any great extent a matter of choice, being in relation to our manufacturing activity. It would appear that if further adjustment is requisite it must come by our loaning less abroad, by our exporting less, or by our reducing the tariff.

### Short-Range Buying in Favor

DIVERGENT opinions came out in the recent Chicago conference on buying habits, as to the ultimate effect of close-range buying on the business structure. Most of the comment was favorable. Hand-to-mouth buying by four railroads operating 17 per cent of the country's mileage and handling 23 per cent of its freight tonnage had reduced inventories \$140,000,000, as compared with the previous high peak. Rehabilitation of railroad equipment and cooperation of shippers have resulted in good railroad service, to which hand-to-mouth buying is closely related.

Offsetting this advantage is the fact that in

some instances cars are loaded more lightly because of smaller specifications. The steady flow of business, however, with use of rolling stock 24 hours per day, has lowered the cost of operation. Railroads always have made their best cost records in times of congestion. Empty car mileage is not an index to operating efficiency, as the direction of traffic is definitely established, foodstuffs flowing eastward and manufactured articles westward.

Opposed to the railroad view is that of a large mail order house, whose representative held that hand-to-mouth buying raises the cost of both production and distribution. He predicted that the method would continue, but that ultimately there would be a more equitable distribution of the increased cost between buyer and seller.

A banking view is that hand-to-mouth buying has relieved the stress which otherwise would result from greatly expanded credits in periods when money is easy. The banker is well satisfied with the present situation, because his loans are more uniform and credits are more elastic. A representative of the National Purchasing Agents Association stated that short-term buying is favored by buyers. He believes that the practice will continue as long as it pays.

That short rolling schedules interfere seriously with cost reduction in steel mills is not matter for debate. To that extent the small specifications cut heavily into mill profits. At least a portion of the unsatisfactory condition with regard to profits in steel, as well as in other industries, may be laid to this practice. Benefits in which both manufacturers and distributors have shared are persistent ease in credits, highly efficient transportation, unusually stable prices, and avoidance of the large accumulations of stocks between producer and ultimate consumer which in the days of great swings in values often produced violent reactions and widespread loss.

### New Member of Engineering Foundation

George E. Roberts, vice-president of the National City Bank, New York, has been elected a member-at-large of the Engineering Foundation. Mr. Roberts succeeds Elmer A. Sperry, president of the Sperry Gyroscope Co., Brooklyn, N. Y., and will serve three years. He is one of three members-at-large, the others being A. C. Dinkey, president of the Midvale Co., Philadelphia, and Dr. A. D. Little of Boston.

### Many Metals Used in Radio Sets

The many metals used in the manufacture of radio receiving sets are mentioned and their functions described in an article prepared for publication by Frank A. D. Andrea, 1581 Jerome Avenue, New York, head of a large radio receiver manufacturing company. Chrome steel, it is stated, is used in the best loud speakers and vanadium steel is utilized in magnet building. High-silicon steel is used in making transformer laminations and also goes into pole pieces and armatures in certain cone speakers. Copper is used for wiring and shielding; brass goes into condenser plates, nuts, screws, eyelets, rivets, pins, screw machine parts of various sorts; bronze finds its place in ornamentation; aluminum is used for die cast brackets, and for punched press parts for condenser plates. Also some of the moving parts of speakers where the element of light-

ness is essential are made of aluminum; zinc also is used in various die castings, such as brackets, cone bases, etc.

### Prices on Steel Windows Reduced

New discounts on steel windows, mechanical operators, steel doors and kindred products, representing a reduction in prices averaging 11 per cent, have been announced by the Truscon Steel Co., Youngstown, Ohio. Recent efforts of a committee of manufacturers, acting in cooperation with the division of simplified practice, Department of Commerce, Washington, have brought about substantial savings by elimination of waste in manufacture and the reduction of costs of distribution. These savings, it is stated, are being passed on to the consumer. The new discounts, which are based on a standard published price list, are effective March 15. They are as follows:

	Per Cent
Individual jobs listing to \$500.....	45
\$500 to \$1,000 .....	50
1,000 to 3,000 .....	50 and 10
3,000 to 6,000 .....	50 and 15
6,000 to 10,000 .....	50 and 20
10,000 to 20,000 .....	50 and 25
Jobs listing over \$20,000.....	50 and 30

The steel window and door business has become an important branch of the steel industry and is proving an outlet for an increasingly heavy tonnage. The market is said to be fairly well stabilized, and a favorable volume of trade is developing in most centers.

# Large Gain in February Iron Output

Daily Rate 4901 Tons Larger Than January, According to  
Revised Data—Net Gain of 9 Furnaces—  
Exceeds February Last Year

A GAIN, as in January, the actual data for the pig iron production of February show that the estimates, collected by wire and published last week, were very close to the real output. The February actual production was 105,024 tons per day as compared with 104,934 tons per day as the estimate published in THE IRON AGE, March 3—a difference of only 90 tons per day. The January daily rate was 100,123 tons per day so that the February rate was 4901 tons per day, or about 4.9 per cent larger than that of January.

The production of coke pig iron for the 28 days of February was 2,940,679 gross tons or 105,024 tons per day as compared with 3,103,820 tons or 100,123 tons per day for the 31 days of January. The February rate was larger than that of February, 1926, when it was 104,408 tons per day, an increase of 616 tons per day.

There was a net gain of 9 furnaces during February, 11 having been blown in and only 2 blown out.

Daily Rate of Pig Iron Production by Months—Gross Tons

	Steel Works	Merchants*	Total
February, 1926 .....	81,148	23,260	104,408
March .....	85,841	25,191	111,032
April .....	89,236	25,768	115,004
May .....	86,682	25,622	112,304
June .....	82,186	25,658	107,844
July .....	79,392	24,586	103,978
August .....	78,216	25,025	103,241
September .....	81,224	23,319	104,543
October .....	83,188	24,365	107,553
November .....	82,820	25,070	107,890
December .....	74,909	24,803	99,712
January, 1927 .....	75,609	24,514	100,123
February .....	80,595	24,429	105,024

\*Includes pig iron made for the market by steel companies.

Pig Iron Production by Districts, Gross Tons

	Feb. (28 days)	Jan. (31 days)	Dec. (31 days)	Nov. (30 days)
New York and Mass. ....	198,877	212,856	210,243	218,657
Lehigh Valley ....	83,712	89,381	88,182	97,722
Schuylkill Valley....	75,063	79,010	65,283	64,716
Lower Susq. and Lebanon Valleys....	42,753	48,313	48,537	47,413
Pittsburgh district..	604,415	654,225	645,592	682,246
Shenango Valley....	100,142	105,748	96,732	93,466
Western Penna....	102,912	97,818	105,996	118,005
Maryland, Virginia and Kentucky ....	90,620	89,990	88,488	87,659
Wheeling district....	113,632	130,872	128,077	111,166
Mahoning Valley....	265,389	287,686	281,275	316,586
Central and North- ern Ohio .....	303,080	302,339	321,684	347,547
Southern Ohio .....	42,189	47,160	42,892	50,757
Illinois and Indiana	534,605	553,013	557,064	568,312
Mich., Minn., Mo. Wis., Colo. and Utah .....	140,730	152,266	151,468	150,981
Alabama .....	236,786	246,536	252,932	274,604
Tennessee .....	5,774	6,607	6,615	6,870
Total .....	2,940,679	3,103,820	3,091,060	3,236,707

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since Jan. 1, 1922—Gross Tons

	1923	1924	1925	1926	1927
Jan. ....	104,181	97,384	108,720	106,974	100,123
Feb. ....	106,935	106,026	114,791	104,408	105,024
Mar. ....	113,673	111,809	114,975	111,032	.....
Apr. ....	118,324	107,781	108,632	115,004	.....
May ....	124,764	84,358	94,542	112,304	.....
June ....	122,548	67,541	89,115	107,844	.....
1/2 year....	115,147	95,794	105,039	109,660	.....
July ....	118,656	57,577	85,936	103,978	.....
Aug. ....	111,274	60,875	87,241	103,241	.....
Sept. ....	104,184	68,442	90,873	104,543	.....
Oct. ....	101,586	79,907	97,528	107,553	.....
Nov. ....	96,476	83,656	100,767	107,890	.....
Dec. ....	94,225	95,539	104,853	99,712	.....
Year ....	109,713	85,075	99,735	107,043	.....

In January the net gain was 5 furnaces with a net loss of 9 furnaces in December.

Capacity Active on March 1

On March 1 there were 217 furnaces active as compared with 208 on Feb. 1. The estimated daily capac-

Coke Furnaces in Blast

Furnaces	Total Stacks	March 1 In Blast	Capacity per Day	Feb. 1 In Blast	Capacity per Day
New York:					
Buffalo .....	21	11	5,310	11	5,000
Other N. Y. and Mass.	6	5	1,790	5	1,720
New Jersey .....	3	0	....	0	....
Pennsylvania:					
Lehigh Valley .....	11	6	2,740	6	2,475
Spiegelstein .....	2	2	250	2	240
Schuylkill Valley .....	12	6	2,680	6	2,530
Susquehanna Valley ..	4	3	1,175	3	1,245
Ferromanganese ..	1	1	75	1	75
Lebanon Valley ....	1	1	200	1	220
Ferromanganese ..	2	1	70	1	70
Pittsburgh District..	52	37	21,675	35	20,740
Ferro. and Spiegel ..	4	2	355	3	440
Shenango Valley ....	13	8	3,915	7	3,545
Western Pennsylvania	18	6	3,365	5	2,825
Ferromanganese ..	2	2	305	2	315
Maryland .....	5	6	2,515	6	2,480
Ferromanganese ..	1	0	....	0	....
Wheeling District ....	13	8	3,555	9	4,400
Ohio:					
Mahoning Valley ...	26	16	9,435	16	9,100
Central and Northern	23	19	10,610	17	9,765
Southern .....	13	5	1,505	5	1,540
Illinois and Indiana...	44	33	19,370	29	17,450
Mich., Wis. and Minn..	12	8	3,420	7	3,055
Colo., Mo. and Utah...	7	4	1,945	4	1,845
The South:					
Virginia .....	16	1	250	1	235
Ferromanganese ..	1	1	80	1	85
Kentucky .....	6	1	385	1	305
Alabama .....	34	22	8,375	22	8,660
Ferromanganese ..	1	1	80	1	70
Tennessee .....	12	1	205	1	205
Total .....	365	217	106,135	208	100,635

Production of Steel Companies for Own Use—Gross Tons

	Total Iron, Spiegel and Ferro	Spiegelstein and Ferromanganese*
	1926	1927
Jan. ...	2,599,876	2,343,881
Feb. ...	2,272,150	2,256,651
Mar. ...	2,661,092	24,064
Apr. ...	2,677,094	24,134
May ...	2,687,138	23,159
June ...	2,465,583	25,378
1/2 year. 15,362,933	148,178	42,083
July ...	2,461,161	26,877
Aug. ...	2,424,687	23,557
Sept. ...	2,436,733	25,218
Oct. ...	2,578,830	28,478
Nov. ...	2,484,620	31,903
Dec. ...	2,322,180	31,627
Year.. 30,071,144	315,828	74,096

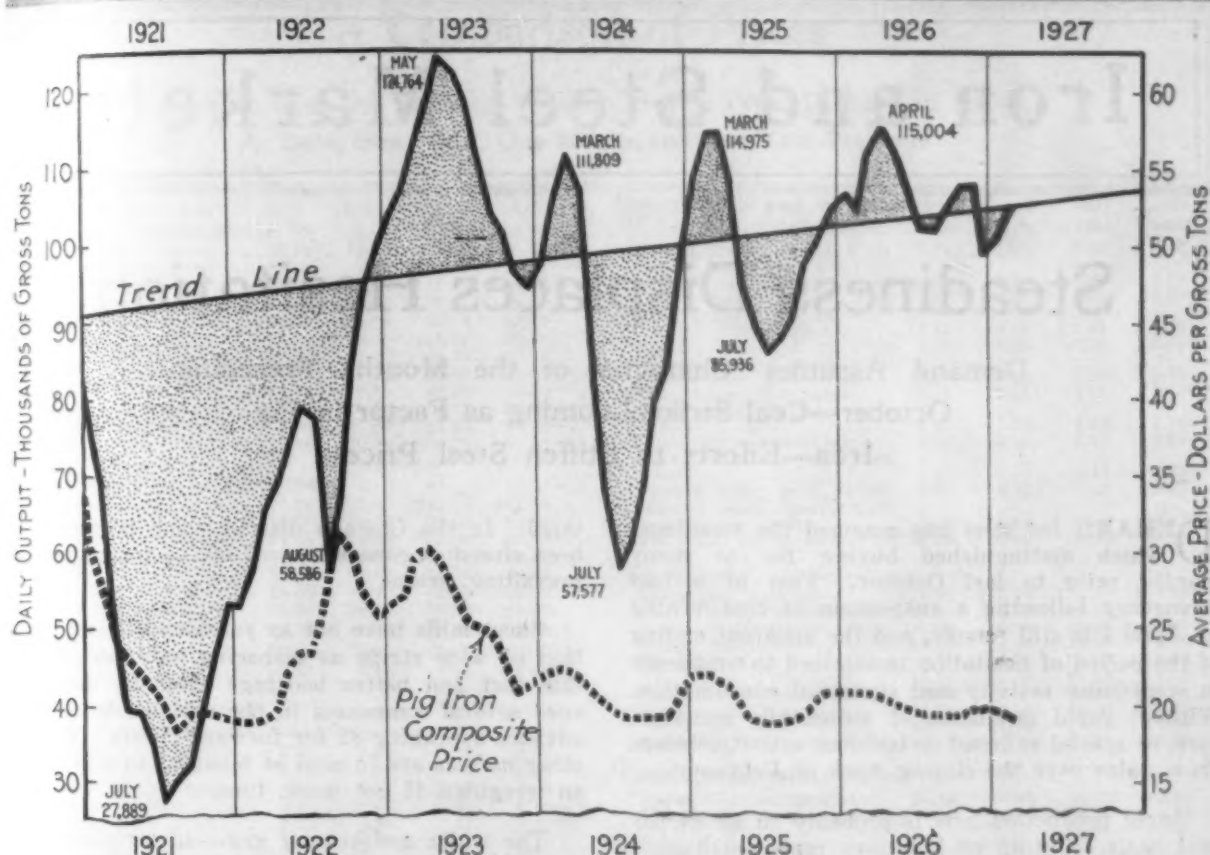
\*Includes output of merchant furnaces.

Production of Coke and Anthracite Pig Iron in United States By Months, Beginning Jan. 1, 1924—Gross Tons

	1925	1926	1927
Jan. ....	3,370,336	3,316,201	3,103,820
Feb. ....	3,214,143	2,923,415	2,940,679
Mar. ....	3,564,247	3,441,986	.....
Apr. ....	3,258,958	3,450,122	.....
May ....	2,930,807	3,481,428	.....
June ....	2,673,457	3,235,309	.....
1/2 year....	19,011,948	19,548,461	.....
July ....	2,664,024	3,223,338	.....
Aug. ....	2,704,476	3,200,479	.....
Sept. ....	2,726,198	3,126,293	.....
Oct. ....	3,023,370	3,334,132	.....
Nov. ....	3,023,006	3,236,707	.....
Dec. ....	3,250,448	3,091,060	.....
Year* .....	36,403,470	39,070,470	.....

\*These totals do not include charcoal pig iron. The 1925 production of this iron was 196,164 tons.





Daily Pig Iron Output in February Considerably Larger Than in January; Composite Price Lower  
Inclined line represents the gradually increasing theoretical needs of the country, and shows that production is slightly below the so-called normal. Dotted line represents THE IRON AGE composite price

ity of the 217 furnaces blowing on the first day of this month was 106,135 tons as compared with 100,635 tons per day for the 208 furnaces active on Feb. 1. Of the 11 furnaces blown in 7 were Steel Corporation and 3 were independent steel company stacks while one was a merchant iron furnace. One Steel Corporation and one independent steel company furnace blew out.

#### Manganese Alloys Produced

Ferromanganese output in February was 24,560 tons as compared with 22,309 tons in February, last year. The January output was 31,844 tons. The February spiegeleisen output was 7045 tons, comparing with 7084 tons in February last year.

#### Furnaces Blown In and Out

Among the furnaces blown in during February were one Edgar Thomson furnace of the Carnegie Steel Co. in the Pittsburgh district; one Newcastle furnace of the Carnegie Steel Co. in the Shenango Valley; one furnace at the Cambria plant of the Bethlehem Steel Corporation in western Pennsylvania; one Ohio furnace of the Carnegie Steel Co. in the Mahoning Valley; two River furnaces of the Corrigan-McKinney Steel Co. in northern Ohio; two South Chicago furnaces of the Illinois Steel Co. and two Gary furnaces in the Chicago district, and one Mayville furnace in Wisconsin.

Among the furnaces blown out or banked during February were one Mingo furnace of the Carnegie Steel Co. in the Wheeling district, and one furnace of the Youngstown Sheet & Tube Co. in the Mahoning Valley.

The spring meeting of the American Refractories Institute will be held May 18 and 19 at the Hotel Traymore, Atlantic City. The first day will be devoted to business and technical meetings while a golf tournament is scheduled for the second day.

### Predicts Heavy Buying of Railroad Equipment This Year

That railroads in this country have nearly reached their maximum efficiency in the prompt handling and releasing of cars, with a resulting need for larger additions to their equipment in the future than has been the case in the last 10 years, is the conclusion of E. B. Leigh, president Chicago Railway Equipment Co., Chicago, as outlined in the annual report of that company. Mr. Leigh points out that the railroads of the United States have made a net addition to their rolling stock in the last 10 years of only 100,000 cars. The average size of car, however, has been greatly increased and from the standpoint of tonnage the increase since 1916 has been approximately 265,780 units.

During 1926 approximately 104,000 cars were installed while 103,863 cars were destroyed or retired. It is Mr. Leigh's contention that the high degree of efficiency on the part of the railroads cannot be increased to any large extent in the face of the growing demands of traffic, and that 1927 will be one of large buying of equipment by the large carriers.

### Australian Industrial Mission Now in the United States

WASHINGTON, March 8.—The Australian mission which arrived in the United States last week will visit most of the large industrial centers in the hope that as a result of its observations and investigations it will be able to submit a volume of facts and recommendations which will increase the efficiency and promote the development of secondary industries in Australia. The commission was constituted by the Australian Government and is being accompanied during its trip by Trade Commissioner R. J. Phillips of the Bureau of Foreign and Domestic Commerce.

# Iron and Steel Markets

## Steadiness Displaces Hesitation

Demand Assumes Character of the Months Preceding  
October—Coal Strike Looming as Factor in Pig  
Iron—Efforts to Stiffen Steel Prices

**D**EMAND for steel has assumed the steadiness which distinguished buying for so many months prior to last October. Fear of a fuel stringency following a suspension of coal mining on April 1 is still remote, and the apparent ending of the period of hesitation is ascribed to confidence in continuing activity and sustained consumption. Without rapid expansion of automobile manufacture, or special railroad or building activity, orders show gains over the closing week of February.

Ingot production now is probably on an 88 per cent basis. Output of February represented 86½ per cent of capacity, but while so far 1927 is some 5 per cent under the corresponding period of 1926, the indications are that the present month will exceed every month of last year except March. The excess of output over shipments, with the resultant stocking of some steel, chiefly in semi-finished form, should serve to postpone any coal strike troubles.

Prices are stiffer to the extent that producers are undertaking to name levels \$2 a ton higher for forward commitments, as in sheets, and \$4 in cold rolled strips, and to the extent that the minimum on the more irregular products is in general higher. New extras, which will add \$1 or \$2 a ton to the thinner gages of blue annealed sheets, are soon to be announced.

The firmer price stand is calculated, as usual, to drive in business, but consumers at present show little interest in the second quarter. Some ordered enough early in the year to carry them into the second quarter. Chicago reports the best buying and in lines which have given mills better balanced order books than in a long time.

In pig iron, the impending coal strike is looming as a factor, although it has not yet had any material effect on coke or coal prices. Buyers are showing more interest in forward needs, and several large purchases, notably of basic iron, are attributable to a desire for full protection. At the same time Valley furnaces have advanced quotations 50c. a ton.

Pig iron also has a stronger tone at Cleveland, where prices on foundry and malleable for local delivery show a 50c. rise for the second time in two weeks. In most other districts the situation is still highly competitive. In the East, Buffalo iron continues to invade eastern Pennsylvania, in addition to dominating the New York and New England markets. Most of the large buyers along the Eastern seaboard, however, have covered their requirements through the second quarter and into the

third. In the Chicago district some business has been closed at concessions of 50c. a ton under the prevailing prices.

Sheet mills have not as yet found the competition of wide strips as menacing as expected, and this fact and better bookings evidently strengthened several companies in the decision to ask the advance averaging \$2 for forward orders. Enough other makers are in need of business to give prices an irregular, if not weak, tone.

The wider and heavier gages of strip steel are being quoted on a plate base price, but the practice is not generally in effect. Weakness is less pronounced than a few weeks ago. A cold rolled strip base of 3c., Pittsburgh or Cleveland, with no differential for tubing stock, has not eliminated a 2.85c. quotation.

Railroad equipment orders totaled 1475 cars and 20 locomotives. The Southern Pacific bought some 9000 tons of track accessories.

A Ford inquiry for 385,000 tons of ore has appeared, approximately the amount bought last year. The business may not be placed for several weeks.

Japan has bought about 8000 tons of 100-lb. rails, 4700 tons for South Manchuria going to the de Wendel works of France, and probably the remainder, which is for the Imperial Government railroads. Two Japanese tin plate inquiries cover 16,000 base boxes.

The Pont-a-Mousson works of France has taken an order for 6500 tons of cast iron pipe for South India. From a Belgian interest Los Angeles finds its low bid on 5280 tons of 4 and 6-in. pipe.

British mills are operating at capacity and deliveries range up to 16 weeks on current bookings. Pig iron for export from England is in excess of \$20 per ton, but business has practically ceased.

German makers of products employing steel have been favored again by additional bounties, such as \$1.90 per ton on slabs, and 47c. on heavy sheets.

Both of THE IRON AGE composite prices remain unchanged this week, pig iron standing for the fourth week at \$18.96 a ton and finished steel for the third week at 2.367c. a lb.



## A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics  
At Date, One Week, One Month, and One Year Previous

Pig Iron, Per Gross Ton:	Mar. 8, 1927	Mar. 1, 1927	Feb. 8, 1927	Mar. 9, 1926
No. 2, fdy., Philadelphia	\$21.76	\$21.76	\$21.76	\$22.76
No. 2, Valley furnace	18.50	18.50	18.50	20.50
No. 2, Southern, Cin'ti.	21.69	21.69	21.69	25.69
No. 2, Birmingham	18.00	18.00	18.00	22.00
No. 2 foundry, Chicago*	20.00	20.00	20.50	23.00
Basic, del'd eastern Pa.	21.00	21.00	21.25	22.25
Basic, Valley furnace	18.00	18.00	18.00	20.00
Valley Bessemer, del. P'gh	21.26	20.76	20.76	22.76
Malleable, Chicago*	20.00	20.00	20.50	23.00
Malleable, Valley	18.50	18.50	18.50	20.50
Gray forge, Pittsburgh	19.76	19.76	19.76	21.76
L. S. charcoal, Chicago	27.04	27.04	27.04	29.04
Ferromanganese, furnace	100.00	100.00	100.00	100.00

Rails, Billets, etc., Per Gross Ton:	Mar. 8, 1927	Mar. 1, 1927	Feb. 8, 1927	Mar. 9, 1926
O.-h. rails, heavy, at mill	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill	36.00	36.00	36.00	35.00
Bess. billets, Pittsburgh	34.00	34.00	33.00	35.00
O.-h. billets, Pittsburgh	34.00	34.00	33.00	35.00
O.-h. sheet bars, P'gh	34.00	34.00	34.00	36.00
Forging billets, P'gh	40.00	40.00	40.00	40.00
O.-h. billets, Phila.	38.30	38.30	38.30	40.30
Wire rods, Pittsburgh	43.00	43.00	43.00	45.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb.	1.90	1.90	1.90	1.90

Finished Iron and Steel, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.12	2.12	2.22	2.22
Iron bars, Chicago	2.00	2.00	2.00	2.00
Steel bars, Pittsburgh	1.90	1.90	1.90	2.00
Steel bars, Chicago	2.00	2.00	2.00	2.10
Steel bars, New York	2.24	2.24	2.24	2.34
Tank plates, Pittsburgh	1.85	1.85	1.85	1.85
Tank plates, Chicago	2.00	2.00	2.00	2.10
Tank plates, New York	2.19	2.19	2.19	2.14
Beams, Pittsburgh	1.90	1.90	1.90	1.90
Beams, Chicago	2.00	2.00	2.00	2.10
Beams, New York	2.19	2.19	2.24	2.24
Steel hoops, Pittsburgh	2.30	2.30	2.20	2.50

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Sheets, Nails and Wire, Per Lb. to Large Buyers:	Mar. 8, 1927	Mar. 1, 1927	Feb. 8, 1927	Mar. 9, 1926
Sheets, black, No. 24, P'gh	2.75	2.75	2.80	3.10
Sheets, black, No. 24, Chi-				
cago dist. mill	2.95	2.95	2.90	3.30
Sheets, galv., No. 24, P'gh	3.65	3.65	3.75	4.05
Sheets, galv., No. 24, Chi-				
cago dist. mill	3.85	3.85	3.85	4.25
Sheets, blue, 9 & 10, P'gh	2.20	2.20	2.20	2.50
Sheets, blue, 9 & 10, Chi-				
cago dist. mill	2.30	2.30	2.30	2.60
Wire nails, Pittsburgh	2.55	2.55	2.55	2.65
Wire nails, Chicago dist.				
mill	2.60	2.60	2.60	2.70
Plain wire, Pittsburgh	2.40	2.40	2.40	2.50
Plain wire, Chicago dist.				
mill	2.45	2.45	2.45	2.55
Barbed wire, galv., P'gh	3.25	3.25	3.25	3.35
Barbed wire, galv., Chi-				
cago dist. mill	3.30	3.30	3.30	3.40
Tin plate, 100 lb. Box, P'gh	\$5.50	\$5.50	\$5.50	\$5.50

Old Material, Per Gross Ton:	Mar. 8, 1927	Mar. 1, 1927	Feb. 8, 1927	Mar. 9, 1926
Carwheels, Chicago	\$15.00	\$15.00	\$15.00	\$17.00
Carwheels, Philadelphia	16.00	16.00	16.00	17.50
Heavy melting steel, P'gh	16.50	16.00	16.00	18.00
Heavy melting steel, Phila.	14.50	14.50	14.50	15.50
Heavy melting steel, Ch'go	13.75	12.75	13.00	14.00
No. 1 cast, Pittsburgh	15.75	15.75	15.75	17.00
No. 1 cast, Philadelphia	17.00	17.00	17.00	17.50
No. 1 cast, Ch'go (net ton)	16.50	16.50	16.50	17.00
No. 1 RR. wrot., Phila.	17.00	17.00	17.00	17.00
No. 1 RR. wrot., Ch'go (net)	12.00	12.00	11.75	13.00

Coke, Connellsville, Per Net Ton at Oven:	Mar. 8, 1927	Mar. 1, 1927	Feb. 8, 1927	Mar. 9, 1926
Furnace coke, prompt	\$3.50	\$3.50	\$3.25	\$3.25
Foundry coke, prompt	4.50	4.50	4.25	4.50

Metals, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	13.50	13.25	12.75	14.37 1/2
Electrolytic copper, refinery	13.12 1/2	13.12 1/2	13.30	13.95
Zinc, St. Louis	6.77 1/2	6.82 1/2	6.55	7.40
Zinc, New York	7.12 1/2	7.17 1/2	6.90	7.75
Lead, St. Louis	7.35	7.32 1/2	7.22 1/2	8.30
Lead, New York	7.05	7.40	7.40	8.60
Tin (Strait), New York	70.00	69.62 1/2	69.50	64.00
Antimony (Asiatic), N. Y.	13.00	13.50	15.25	19.50

## Pittsburgh

### Coal Strike Threat Taken More Seriously by Both Buyers and Producers of Iron and Steel

PITTSBURGH, March 8.—The growing probability that there will be no adjustment between now and April 1 of the wage dispute between union mine owners and miners and the fear that a suspension of operations will not be confined solely to the union mines have in the past week begun to exert some positive influence upon the iron and steel market. Asking prices on all grades of iron have been advanced 50c. per ton, and while the advance has been established by sales only in the case of Bessemer iron, there is growing indifference on the part of producers toward business except at the higher levels. Steel makers are getting inquiries from their customers, notably the larger ones, as to what effect the coal strike will have upon their ability to produce, and here and there is found evidence in the shape of orders that consumers see an advantage in having protection against the possibilities of the strike.

Quite apart from the strike factor, the actual requirements of steel are steadily increasing as the period of normally active consumption approaches. Demand generally in the past few weeks has assumed that constancy which marked it over 18 months ending last October, and while the volume is lighter and order books are estimated to be as much as 20 per cent smaller than they were a year ago, the market has made a showing that has tended to restore confidence and an equilibrium that was lacking in the first two months of the year.

Prices as a whole are firmer, and definite advances have appeared in sheet prices on second quarter tonnage, while the recent advance in hot-rolled strips has been followed by a like one in cold-rolled strips. Sheet makers want \$2 a ton more than they recently have been accepting, while the new minimum price of 3c., base, on cold-rolled strips represents an advance of \$4 a ton. Meanwhile, there is greater stability to the market on wire products and plates, shapes and bars than was true a few weeks ago.

Ingot production is still rising in this and nearby districts and easily averages 85 per cent of capacity, with the principal Steel Corporation steel-making unit doing even better than that. In spite of the improvement in business in the past six weeks, it may be observed safely that the present rate of steel output exceeds present requirements and that all companies, by building up reserves of steel, are making some preparation for emergencies that may arise from the coal strike. The automotive industry has not made the recovery in production that was expected, and railroad car buying, which was so promising at the opening of the year, lately has been disappointingly small. Oil prices are slipping, and this may have some effect upon pipe requirements for drilling.

The coal strike and its duration and breadth continue to puzzle even the most competent observers. There is the suggestion that union leaders will try to control the West Virginia and Kentucky fields in an effort to cut off the cheap coal that has made the operation of the union mines so difficult. Some subscribe to the idea that miners in the non-union fields will give the union strike some support in an effort to preserve the present wage scale. Unanimity of opinion is found only in the expression that, as there has been plenty of preparation in the way of fuel stocks, the

strike will not be effective in lifting prices until along in May or June.

**Pig Iron.**—The market is not only more active, but firmer. Merchant producers can see no relief through lower coke costs in the second quarter, and with melters taking out iron freely on contracts and furnace stocks dwindling, there is a common tendency to seek higher prices. This movement is aided by the fact that the steel companies are disposed to hold onto their surplus stocks until they see how extensive the strike of the coal miners on April 1 is going to be. Some consumers also are a little uneasy over the outlook, and known sales during the past week have been at least 20,000 tons, principally of the steel-making grades. One lot of between 10,000 and 12,000 tons of basic grade piled at a western Pennsylvania furnace is included in the week's transactions. This iron was not of standard analysis, running high in phosphorus and low in silicon and manganese, and was sold at \$18.76, delivered, which would work back to \$17, Valley furnace. The American Steel Foundries, Alliance, Ohio, secured 4000 tons of standard basic at \$18, Valley furnace, and the Edgewater Steel Co. bought 2000 tons of the same grade at the same price. Sales of 2000 tons of Bessemer iron are noted at \$19.50, Valley furnace, an advance of 50c. over last week's price. Producers generally are now asking \$18.50 for basic iron and most of them have gone to \$19, Valley furnace, for No. 2 grade, but no sales have yet been made at those prices, business in foundry iron, which, besides a number of small tonnages, included one of 1500 tons, having been at \$18.50. The advance thus has registered only in the case of the Bessemer iron.

We quote f.o.b. Valley furnace, the freight for delivery to the Cleveland or Pittsburgh district being \$1.76 per gross ton:

Basic .....	\$18.00 to \$18.50
Bessemer .....	19.50
Gray forge .....	18.00 to 18.50
No. 2 foundry .....	18.50 to 19.00
No. 3 foundry .....	18.00 to 18.50
Malleable .....	18.50 to 19.00
Low phosphorus, copper free....	28.00

**Ferroalloys.**—New business in ferromanganese is very light, with sales running entirely to carloads, and not many of these. The market price is still \$100, Atlantic seaboard, for either domestic or foreign material. Contract buyers are specifying steadily. The problem of the leading producer of spiegeleisen is to supply fully the contract customers and also to take care of the occasional buyer. Spot offerings of this alloy are very limited. Specifications against ferrosilicon contracts are being made fairly freely.

**Semi-Finished Steel.**—Sheet bars and large billets and slabs all remain quotable at \$34, f.o.b. Pittsburgh or Youngstown. Demand is stronger in billets and slabs than in sheet bars, as the strip makers, the principal users of billets and slabs, have larger order books and are busier than the sheet makers. This explains the passing of the usual differential of \$1 a ton between sheet bars and the other forms. Forging quality billets hold at \$40, base, and are moving with more freedom as the requirements of the automotive industry

expand. No open market activity worth noting is seen in skelp. Wire rods are moving a little better than they did recently.

**Wire Products.**—There is a steady and well-diversified flow of orders for nails, wire and fence and fencing supplies to mills in this district, and in this immediate territory the market is now well established at \$2.55, base, per keg, Pittsburgh, on nails and at \$2.40, base, per 100 lb. on plain wire. Some irregularity still exists in consuming districts where there is competition between producing centers for a share of the business offered.

**Rails and Track Supplies.**—A continued good movement of standard-section rails on 1927 contracts is still unaccompanied by activity in the track accessories. The past week has been a quiet one in spikes, bolts and tie plates. Light-section rails are only moderately active, but recent prices are maintained, as they are also on track supplies.

**Tubular Goods.**—The 60 miles of 6½-in. line pipe recently inquired for by the Pure Oil Co. is reported to have been placed with an Eastern producer. Youngstown mills recently took some fair-sized line pipe orders for Southwestern producers. In a general way, line pipe still stands out as the most active line of tubular goods. Standard pipe is moving steadily but business lacks volume, and recent declines in oil prices, suggestive of excessive production, are not without effect upon the demand for well pipe, although shipments compare well with those of other years at this season. The boiler tube market is still favorable to buyers. Discounts are given on page 741.

**Sheets.**—A steady, but appreciable, expansion in demand for sheets, while not adding much to mill obligations, is at least strengthening the attitude of many manufacturers on prices, especially since the competition of wide strips has not yet assumed the proportions it was expected to a short time ago. Mills generally are resisting efforts to depress prices below present levels on early shipment tonnages, and a few mills, which have opened their books for second quarter business, have named 2.90c., base Pittsburgh, for black, 3.75c., base, for galvanized and 2.25c., base, for blue annealed. These prices are \$2 a ton above the ruling prices of the past few weeks, which have not yet disappeared. Sheet production is well up to orders and specifications, most of which are for early shipment. Automobile body sheets are moving in keeping with the expansion in that industry, which is crawling, rather than racing, back to the production rate of last fall. Some irregularity is noted in long ternes, sales of which are noted at as low as 4.10c., base. Sales, however, are still being made at 4.30c., base, for primes, which would mean 4.20c. for unassorted shipments, and it is believed here that the price of 4.10c. applies on unassorted stock.

**Tin Plate.**—New business is light, but mills having contract customers are still fully engaged and have sufficient orders to remain so for the next few months. Fairly good export demand is reported, notably from

## THE IRON AGE Composite Prices

### Finished Steel

March 8, 1927, 2.367c. a Lb.

One week ago.....	2.367c.
One month ago.....	2.374c.
One year ago.....	2.431c.
10-year pre-war average.....	1.689c.

Based on steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 87 per cent of the United States output of finished steel.

	High		Low	
1927	2.453c.	Jan. 4:	2.367c.	Feb. 21
1926	2.453c.	Jan. 5:	2.403c.	May 18
1925	2.560c.	Jan. 6:	2.396c.	Aug. 18
1924	2.789c.	Jan. 15:	2.460c.	Oct. 14
1923	2.824c.	April 24:	2.446c.	Jan. 2

### Pig Iron

March 8, 1927, \$18.96 a Gross Ton

One week ago.....	\$18.96
One month ago.....	19.13
One year ago.....	21.63
10-year pre-war average.....	15.72

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

	High		Low	
1927	\$19.71,	Jan. 4:	\$18.96,	Feb. 15
1926	21.54,	Jan. 5:	19.46,	July 12
1925	22.50,	Jan. 13:	18.96,	July 7
1924	22.88,	Feb. 26:	19.21,	Nov. 3
1923	30.86,	March 20:	20.77,	Nov. 20



# Mill Prices of Finished Iron and Steel Products

## Iron and Steel Bars

### Soft Steel

#### Base Per Lb.

Fab. Pittsburgh mills.....	1.90c.
Fab. Chicago.....	2.00c. to 2.10c.
Fab. Philadelphia.....	2.22c.
Del'd New York.....	2.24c.
Del'd Cleveland.....	2.09c.
Fab. Birmingham.....	2.05c. to 2.15c.
Fab. Pacific ports.....	2.35c.
Fab. San Francisco mills.....	2.35c. to 2.40c.

### Billet Steel Reinforcing

Fab. Pittsburgh mills.....	1.90c.
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### Rail Steel

Fab. mill.....	1.70c. to 1.80c.
Fab. Chicago.....	1.90c. to 2.00c.

### Iron

Common iron, f.o.b. Chicago.....	2.00c.
Refined iron, f.o.b. P'gh mills.....	2.90c. to 3.00c.
Common iron, del'd Philadelphia.....	2.12c. to 2.22c.
Common iron, del'd New York.....	2.14c. to 2.24c.

## Tank Plates

#### Base Per Lb.

Fab. Pittsburgh mill.....	1.80c. to 1.90c.
Fab. Chicago.....	2.00c. to 2.10c.
Fab. Birmingham.....	1.95c. to 2.05c.
Del'd Cleveland.....	2.09c.
Del'd Philadelphia.....	2.12c. to 2.22c.
Del'd New York.....	2.14c. to 2.24c.
C.I.F. Pacific ports.....	2.35c. to 2.30c.

## Structural Shapes

#### Base Per Lb.

Fab. Pittsburgh mills.....	1.90c.
Fab. Chicago.....	2.00c. to 2.10c.
Fab. Birmingham.....	2.05c. to 2.15c.
Del'd Cleveland.....	2.09c. to 2.19c.
Del'd Philadelphia.....	2.07c. to 2.22c.
Del'd New York.....	2.14c. to 2.24c.
C.I.F. Pacific ports.....	2.35c.

## Hot-Rolled Flats (Hoops, Bands and Strips)

#### Base Per Lb.

All gages, narrower than 6 in., P'gh.....	2.30c.
All gages, 6 in. to 12 in., P'gh.....	2.10c.
All gages, narrower than 6 in., Chicago.....	2.40c. to 2.60c.
All gages, 6 in. and wider, Chicago.....	2.30c. to 2.50c.

\*Mills follow plate or sheet prices according to gage on wider than 12 in.

## Cold-Finished Steel

#### Base Per Lb.

Bars, f.o.b. Pittsburgh mills.....	2.40c.
Bars, f.o.b. Chicago.....	2.40c.
Bars, Cleveland.....	2.45c.
Shafting, ground, f.o.b. mill.....	2.55c. to 3.00c.
Strips, f.o.b. Pittsburgh mills.....	2.80c. to 3.00c.
Strips, f.o.b. Cleveland mills.....	2.55c. to 3.00c.
Strips, delivered Chicago.....	3.15c. to 3.30c.

\*According to size.

## Wire Products

(To jobbers in car lots, f.o.b. Pittsburgh and Cleveland)

#### Base Per Keg

Wire nails.....	\$2.55
Galv'd nails, 1-in. and longer.....	4.55
Galv'd nails, shorter than 1-in.....	4.80
Galvanized staples.....	3.25
Polished staples.....	3.00
Cement coated nails.....	2.55

#### Base Per 100 Lb.

Bright plain wire, No. 9 gage.....	\$2.40
Annealed fence wire.....	2.55
Spring wire.....	3.40
Galv'd wire, No. 9.....	3.40
Barbed wire, galv'd.....	3.25
Barbed wire, painted.....	3.00

Chicago district mill and delivered Chicago prices are \$1 per ton above the foregoing. Birmingham mill prices \$3 a ton higher; Worcester, Mass., mill \$3 a ton higher on production of that plant; Duluth, Minn., mill \$2 a ton higher; Anderson, Ind., \$1 higher.

## Woven Wire Fences

#### Base to Retailers Per Net Ton

Fab. Pittsburgh.....	\$65.00
Fab. Cleveland.....	\$5.00
Fab. Anderson, Ind.....	\$6.00
Fab. Chicago district mills.....	\$7.00
Fab. Duluth.....	\$8.00
Fab. Birmingham.....	\$8.00

## Sheets

### Blue Annealed

#### Base Per Lb.

Nos. 9 and 10, f.o.b. Pittsburgh.....	2.10 to 2.25c.
Nos. 9 and 10, f.o.b. Ohio mill.....	2.10c. to 2.25c.
Nos. 9 and 10, f.o.b. Chicago dist. mill.....	2.30c. to 2.35c.
Nos. 9 and 10, del'd Philadelphia.....	2.47c. to 2.62c.
Nos. 9 and 10, f.o.b. Birmingham.....	2.35c. to 2.45c.

### Box Annealed, One Pass Cold Rolled

No. 24, f.o.b. Pittsburgh.....	2.75c. to 2.90c.
No. 24, f.o.b. Ohio mill.....	2.80c. to 2.90c.
No. 24, f.o.b. Ch'go dist. mill.....	2.95c. to 3.05c.
No. 24, del'd Philadelphia.....	3.07c. to 3.17c.
No. 24, f.o.b. Birmingham.....	3.00c. to 3.10c.

### Metal Furniture Sheets

No. 24, f.o.b. Pittsburgh, A grade.....	3.90c. to 4.00c.
No. 24, f.o.b. Pittsburgh, B grade.....	3.75c. to 3.85c.

### Galvanized

No. 24, f.o.b. Pittsburgh.....	3.60c. to 3.75c.
No. 24, f.o.b. Ohio mill.....	3.70c. to 3.75c.
No. 24, f.o.b. Chicago dist. mill.....	3.85c. to 3.95c.
No. 24, del'd Philadelphia.....	3.92c. to 4.02c.
No. 24, f.o.b. Birmingham.....	3.90c. to 4.00c.

### Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh.....	3.00c. to 3.10c.
No. 28, f.o.b. Chicago dist. mill.....	3.10c. to 3.20c.

### Automobile Body Sheets

No. 20, f.o.b. Pittsburgh.....	4.15c.
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### Long Terns

No. 24, 8-lb. coating, f.o.b. mill.....	4.10c. to 4.30c.
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## Tin Plate

#### Per Base Box

Standard cokes, f.o.b. P'gh district mills.....	\$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.....	5.60

## Terne Plate

(F.o.b. Morgantown or Pittsburgh)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base.....	\$11.40
20-lb. coating L.C.....	\$16.20
15-lb. coating L.C.....	14.85
10-lb. coating L.C.....	14.85
8-lb. coating L.C.....	14.85
25-lb. coating L.C.....	17.90
30-lb. coating L.C.....	19.45
40-lb. coating L.C.....	21.45

## Alloy Steel Bars

(F.o.b. Pittsburgh or Chicago)

S. A. E. Series Numbers.....	Base Per 100 Lb.
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2100* (1/4% Nickel, 0.10% to 0.20% Carbon).....	\$3.00 to \$3.15
2200 (3/4% Nickel).....	4.30 to 4.40
2500 (5% Nickel).....	5.50 to 5.60
3100 (Nickel Chromium).....	3.80 to 3.90
3200 (Nickel Chromium).....	4.75 to 5.00
3300 (Nickel Chromium).....	7.00 to 7.25
3400 (Nickel Chromium).....	6.25 to 6.50
5100 (Chromium Steel).....	3.30 to 3.40
5200* (Chromium Steel).....	7.00 to 7.50
6100 (Chrom. Vanadium bars).....	4.20 to 4.30
6100 (Chrom. Vanad. spring steel).....	8.90
9350 (Silicon Manganese spring steel).....	3.20 to 3.25
Carbon Vanadium (0.45% to 0.55% Carbon, 0.15% Vanad.).....	4.10 to 4.20
Nickel Chrome Vanadium (0.40 Nickel, 0.50 Chrom., 0.15 Vanad.).....	4.20 to 4.30
Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.).....	4.25 to 4.35
Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.).....	3.40 to 3.50
Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molybdenum).....	4.50 to 4.75

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2 1/2 in. squares, the price is \$5 a gross ton above the 4 x 4 billet price.

\*Not S. A. E. specification, but numbered by manufacturers to conform to S. A. E. system.

## Rails

#### Per Gross Ton

Standard, f.o.b. mill.....	\$43.00
Light (from billets, f.o.b. mill.....	34.00
Light (from rail steel), f.o.b. mill.....	34.00
Light (from billets), f.o.b. Ch'go mill.....	\$35.00 to \$3.00

## Track Equipment

(F.o.b. Mill)

#### Base Per 100 Lb.

Spikes, 3/4 in. and larger.....	\$2.50 to \$3.00
Spikes, 1/2 in. and smaller.....	2.90 to 3.25
Spikes, boat and barge.....	3.25
Track bolts, all sizes.....	3.90 to 4.50
Tie plates, steel.....	2.35
Angle bars.....	2.75

## Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

### Butt Weld

Inches	Steel	Black	Galv.	Inches	Iron	Black	Galv.
1/4.....	48	19 1/2	1/4 to 3/8.....	26	11	+	39
1/2.....	51	25 1/2	3/8 to 1/2.....	22	2		
3/4.....	54	42 1/2	1/2 to 3/4.....	28	11		
1.....	58	48 1/2	3/4 to 1.....	30	13		
1 to 3.....	62	50 1/2					

### Lap Weld

2.....	55	43 1/2	2.....	23	7
2 1/2 to 6.....	59	47 1/2	2 1/2.....	26	11
7 and 8.....	56	43 1/2	3 to 6.....	29	13
9 and 10.....	54	41 1/2	7 to 12.....	36	11
11 and 12.....	53	40 1/2			

### Butt Weld, extra strong, plain ends

1/4.....	41	34 1/2	1/4 to 3/8.....	19	+54
1/2 to 3/8.....	47	39 1/2	3/8 to 1/2.....	21	17
3/4.....	53	42 1/2	1/2 to 3/4.....	28	13
1.....	58	47 1/2	3/4 to 1.....	30	14
1 to 1 1/4.....	60	49 1/2			
2 to 3.....	61	50 1/2			

### Lap Weld, extra strong, plain ends

2.....	53	42 1/2	2.....	23	9
2 1/2 to 4.....	57	46 1/2	2 1/2 to 4.....	29	15
4 1/2 to 6.....	54	43 1/2	4 1/2 to 6.....	28	14
7 to 8.....	52	39 1/2	7 to 8.....	31	15
9 and 10.....	46	32 1/2	9 to 12.....	14	2
11 and 12.....	44	31 1/2			

To the large jobbing trade the above discounts on steel pipe are increased on black by one point, with supplementary discount of 5%, and on galvanized by 1 1/2 points, with supplementary discount of 5%. On iron pipe, both black and galvanized, the above discounts are increased to large jobbers by one point with supplementary discounts of 5 and 2 1/2%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

## Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Lap Welded Steel	Charcoal Iron
2 to 2 1/2 in.....	27
2 1/2 to 3 in.....	27
3 in.....	40
3 1/2 to 4 in.....	42 1/2
4 to 12 in.....	46

Beyond the above discounts, 5 to 7 aces extra are given on lap welded steel tubes and 2 tons to 2 tons and 1 five on charcoal iron tubes.

### Standard Commercial Seamless Boiler Tubes

#### Cold Drawn

1 in.....	60	3 in.....	45
1 1/2 to 1 3/4 in.....	62	3 1/2 to 3 3/4 in.....	47
1 3/4 in.....	86	4 in.....	50
2 to 2 1/2 in.....	81	4 1/2, 5 and 6 in.....	43
2 1/2 to 2 3/4 in.....	80		

#### Hot Rolled

2 and 2 1/4 in.....	37	3 1/2 and 3 3/4 in.....	53
2 1/4 and 3 in.....	45	4 in.....	54
3 in.....	51	4 1/2, 5 and 6 in.....	51

Less cartloads, 4 points less. Add \$3 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Mechanical Tubing

#### Per Cent Off List

Carbon, 0.10% to 0.20%, base.....	55
Carbon, 0.20% to 0.40%, base.....	50
Plus differentials for lengths over 16 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.	

Japan. With the increasing use in foreign countries of American automatic can-making machinery, American tin plate is finding a broader export sale as it works better in these machines than does the Welsh plate. The export market on standard coke tin plate is quotable at \$4.65 to \$4.75 per base box, Pittsburgh.

**Hot-Rolled Flats.**—A little business is reported at the higher prices recently announced, but generally there seems to have been too much coverage prior to the advance for the new prices to be seriously tested. In strips, as distinct from hoops and bands, embracing stock 2½ in. to 3 in. and wider, consumers seem to have been able to cover their requirements through the second quarter at the lower levels. Prices are not yet very well defined on strips wider than 12 in. The mills making hoops for cooperage and bands are firm at 2.30c., base.

**Bolts, Nuts and Rivets.**—Good, steady demand is reported for bolts and nuts by local makers, but consumers and jobbers are covering only their real requirements, pending the appearance of the new price lists, which should reach the trade next week. A common discount of 70 per cent on all sizes, slight reductions in list prices of small and advances in large bolts, and the elimination of quantity differentials are understood to be the salient features of the new schedule. The rivet market is still easy in the face of a fairly good demand.

**Steel and Iron Bars.**—Demand for steel bars is more notable for its constancy than for the size of the individual orders. Makers generally are disposed to take a firmer stand on future business, but 1.90c., base Pittsburgh, still is the ruling price on small lots. Iron bars are barely steady and not very active.

**Structural Steel.**—The market is still quotable at 1.90c., Pittsburgh, on small lots of large structural shapes, but mills here are beginning to talk of higher prices. Local fabricating shops are slightly busier, but mostly on small jobs for early delivery. A strike of building trades for higher wages, which has tied up work for about a week, is breaking up.

**Plates.**—Considerable resistance to prices under 1.90c., base Pittsburgh, on the ordinary tonnages is being made by mills in this district, which have a fairly good backlog of car, tank and large pipe business.

**Cold-Finished Steel Bars.**—There is a brisk demand for small tonnages and a good deal of pressure on the part of buyers for delivery. Buying never before was closer to actual requirements, and makers quickly feel any increase in consumption. There are no deviations from 2.40c., base Pittsburgh, on ordinary tonnages.

**Cold-Rolled Strips.**—Makers generally have come out with a new price of 3c., base Pittsburgh or Cleveland, on the more desirable orders for this product. There is a quotation of 3.25c., base, on small lots, and a few makers have announced a sliding scale mode of quotation, which produces a price of 3c. for 1 to 3-ton lots. The latter method, however, is not much observed, as it has not been found practicable because of the inability of makers to establish definite amounts of business that should move at a given price. More-

over, the consumers who could order a fixed tonnage of any one size and take delivery at one time, according to the terms proposed, are not numerous. Consumers have been given considerable protection at lower prices, and the new prices are as yet untested.

**Coke and Coal.**—The proximity of the suspension of the union mines and a generally expected disturbance of the soft coal mining industry has not yet had much effect upon either coal or coke prices. Spot furnace coke is not plentiful, as production is fairly well scaled to contract requirements, but there is not much demand, at least not from the blast furnaces. In small lots, say of two to five cars, standard coke is available at \$3.35 per net ton at ovens, but for larger lots, \$3.50 is about as low as can be done. There are higher quotations, but they are not being realized. While medium and high sulphur coke is still quotable at \$3 to \$3.25, spot foundry coke generally is selling at \$4.50 to \$5. Gas coal is bringing a little more money than recently and steam slack is higher because it is scarce, but production of coal still is too heavy for prices to show real strength.

**Old Material.**—This market continues to strengthen on the steel works grades, \$17 having been paid for heavy melting steel by one Pittsburgh district steel maker, while the heavy steel in the March list of the Pennsylvania Railroad is reported to have brought \$17.10 to \$17.15 on direct purchase by a steel company. The market on this grade is not quotable at under \$16.50, as dealers with short sales to cover have found nothing available at less and have paid it. Compressed sheets also have moved up 50c. per ton; there are firm bids of \$15.50 for this grade, while a recent sale was made at \$14.50, producer's plant, to which would have to be added \$1.39, the freight to the nearest consuming point. Heavy breakable cast is firmly held because of the threat of the coal strike to blast furnace operations, and recent prices are maintained on blast furnace grades. The Norfolk & Western Railway is offering 4484 gross tons in its March scrap list.

We quote for delivery to consumers' yards in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

Per Gross Ton	
Heavy melting steel.....	\$16.50 to \$17.00
Scrap rails.....	16.00 to 16.50
No. 1 cast, cupola size.....	15.50 to 16.00
Compressed sheet steel.....	15.50 to 16.00
Bundled sheets, sides and ends.....	14.50 to 15.00
Railroad knuckles and couplers.....	18.00 to 18.50
Railroad coil and leaf springs.....	18.00 to 18.50
Low phosphorus blooms and bil-	
let ends.....	20.00 to 20.50
Low phosphorus mill plates.....	19.50 to 20.00
Low phosphorus, light grade.....	17.50 to 18.00
Low phosphorus punchings.....	18.00 to 18.50
Steel car axles.....	21.00 to 21.50
Cast iron wheels.....	16.00 to 16.50
Rolled steel wheels.....	18.00 to 18.50
Machine shop turnings.....	12.00
Short shoveling steel turnings.....	12.50 to 12.75
Sheet bar crops.....	17.50 to 18.00
Heavy steel axle turnings.....	14.50 to 15.00
Short mixed borings and turnings.....	12.50 to 12.75
Heavy mixed breakable cast.....	15.50 to 16.00
Cast iron borings.....	12.50 to 12.75
No. 1 railroad wrought.....	12.50 to 13.00
No. 2 railroad wrought.....	16.50 to 17.00
Railroad or automobile malleable	
scrap.....	16.50 to 17.00

#### Warehouse Prices, f.o.b. Pittsburgh

	Base per l.b.
Tank plates.....	3.00c.
Structural shapes.....	3.00c.
Soft steel bars and small shapes.....	2.90c.
Reinforcing steel bars.....	2.75c.
Black sheets (No. 24 gage), 25 or more	
bundles.....	3.75c.
Galvanized sheets (No. 24 gage), 25 or	
more bundles.....	4.50c.
Blue annealed sheets (No. 10 gage), 25 or	
more sheets.....	3.30c.
Cold-finished shafting and screw stock—	
Rounds and hexagons.....	3.60c.
Squares and flats.....	4.10c.
Bands.....	3.60c.
Hoops.....	4.00c. to 4.50c.
Spikes, large.....	3.30c.
Small.....	3.80c. to 5.25c.
Boat.....	3.80c.
Bolts, track.....	4.90c.
Wire, black soft annealed, base per 100 lb.	\$2.90
Wire, galvanized soft, base per 100 lb....	2.90
Common wire nails, per keg.....	2.90
Cement coated nails, per keg.....	2.95

#### Data Issued on Refractories

Some valuable and interesting data have recently been published on refractories and the ceramic industry. The American Ceramic Society, 2525 North High Street, Columbus, Ohio, has just issued, as Part II of its *Journal* for February, a bibliography of the literature on refractories. This is the third in a series of bibliographies compiled by members of the refractories division of the society. It is a pamphlet of 166 pages giving brief abstracts of all articles relating to the industry and in addition there is a subject as well as an author index.

Two pamphlets have also been issued entitled "Bibliography of Silica Refractories" and "Bibliography of Magnesite Refractories," respectively, the first being the second series of such bibliographies, and the other, the first one published. Both have also been compiled by the refractories division of the American Ceramic Society.



# Semi-Finished Steel, Raw Materials, Bolts and Rivets

## Mill Prices of Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms	
	Per Gross Ton
Revolting, 4-in. and over.....	\$34.00
Revolting, under 4-in. to and in- cluding 1½-in. ....	\$34.50 to 35.00
Forging, ordinary .....	40.00
Forging, guaranteed .....	45.00
Sheet Bars	
	Per Gross Ton
Open-hearth or Bessemer.....	\$34.00

Slabs	
	Per Gross Ton
8 in. x 2 in. and larger.....	\$34.00
Smaller than 8 in. x 2 in.....	\$34.50 to 35.00
Skelp	
	Per Lb.
Grooved .....	1.90c.
Sheared .....	1.90c.
Universal .....	1.90c.

Wire Rods	
	Per Gross Ton
*Common soft, base.....	\$43.00
Screw stock .....	\$5.00 per ton over base
Carbon 0.20% to 0.40% .....	3.00 per ton over base
Carbon 0.41% to 0.55% .....	5.00 per ton over base
Carbon 0.56% to 0.75% .....	7.50 per ton over base
Carbon over 0.75% .....	10.00 per ton over base
Acid .....	15.00 per ton over base

\*Chicago mill base is \$44, Cleveland mill base, \$43.

## Prices of Raw Materials

Ores	
Lake Superior Ores, Delivered Lower Lake Ports	
	Per Gross Ton
Old range Bessemer, 51.50% iron.....	\$4.55
Old range non-Bessemer, 51.50% iron.....	4.40
Mesabi Bessemer, 51.50% iron.....	4.40
Mesabi non-Bessemer, 51.50% iron.....	4.25
High phosphorus, 51.50% iron.....	4.15
Foreign Ore, c.i.f. Philadelphia or Baltimore	
	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algeria.....	10.00c. to 10.50c.
Iron ore, Swedish, average 66% iron, 9.50c. to 10.00c. ....	9.50c. to 10.00c.
Manganese ore, washed, 52% manganese, from the Caucasus.....	40c. to 41c.
Manganese ore, Brazilian, African or Indian, basis 50% .....	40c. to 42c.
Tungsten ore, high grade, per unit, in 60% concentrates .....	\$12.00 to \$13.50
Per Ton	
Chrome ore, Indian basic, 48% Cr <sub>2</sub> O <sub>3</sub> , crude, c.i.f. Atlantic seaboard.....	\$22.50
Per Lb.	
Molybdenum ore, 85% concentrates of MoS <sub>2</sub> , delivered .....	50c. to 55c.

Ferromanganese	
	Per Gross Ton
Domestic, 80%, furnace or seab'd.....	\$100.00
Foreign, 80%, Atlantic or Gulf port, duty paid .....	100.00
Spiegeleisen	
	Per Gross Ton Furnace
Domestic, 19 to 21% .....	\$37.00
Domestic, 16 to 19% .....	36.00

Electric Ferrosilicon	
	Per Gross Ton Delivered
50% .....	\$85.00
75% .....	145.00
Per Gross Ton	
	Furnace
10% .....	\$35.00
11% .....	37.00
Per Gross Ton	
	Furnace
12% .....	\$39.00
14 to 16% .....	\$45 to 46.00

Bessemer Ferrosilicon	
F.o.b. Jackson County, Ohio, Furnace	
	Per Gross Ton
10% .....	\$34.00
11% .....	36.00

Silvery Iron	
F.o.b. Jackson County, Ohio, Furnace	
	Per Gross Ton
6% .....	\$26.50
7% .....	27.50
8% .....	28.50
9% .....	30.00
	Per Gross Ton
10% .....	\$32.00
11% .....	34.00
12% .....	36.00

Other Ferroalloys	
Ferrotungsten, per lb. contained metal, del'd .....	\$1.08 to \$1.10
Ferrochromium, 4 to 6% carbon and up, 65 to 70% Cr, per lb. contained Cr, deliv- ered, in carloads .....	11.50c.
Ferrovandium, per lb. contained vanadium, f.o.b. furnace .....	\$3.25 to \$4.00
Ferrocobaltitium, 15 to 18%, per net ton, f.o.b. furnace, in carloads.....	\$200.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton.....	\$91.00
Ferrophosphorus, electric, 24%, f.o.b. An- niston, Ala., per net ton.....	\$122.50

Fluxes and Refractories	
Fluorspar	
	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines.....	\$18.00
No. 2 lump, Illinois and Kentucky mines.....	\$20.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid, \$17.00 to \$17.50 .....	\$17.00 to \$17.50
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines.....	\$32.50

Fire Clay	
Per 1000 f.o.b. Works	
	High Duty Moderate Duty
Pennsylvania .....	\$40.00 to \$43.00 \$38.00 to \$40.00
Maryland .....	43.00 to 46.00 38.00 to 40.00
New Jersey.....	55.00 to 75.00
Ohio .....	40.00 to 43.00 38.00 to 40.00
Kentucky .....	40.00 to 43.00 38.00 to 40.00
Illinois .....	40.00 to 43.00 35.00 to 38.00
Missouri .....	40.00 to 43.00 35.00 to 38.00
Ground fire clay, per ton.....	6.50 to 7.50

Silica Brick	
Per 1000 f.o.b. Works	
Pennsylvania .....	\$40.00
Chicago .....	49.00
Birmingham .....	50.00
Silica clay, per ton.....	\$8.00 to 9.00

Magnesite Brick	
Per Net Ton	
Standard sizes, f.o.b. Baltimore and Chester, Pa. ....	\$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa. ....	40.00

Chrome Brick	
Per Net Ton	
Standard size .....	\$45.00

## Mill Prices of Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts	
(Less-than-Carload Lots)	
(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)	
	Per Cent Off List
Machine bolts, small, rolled threads.....	60 and 10
Machine bolts, all sizes, cut threads.....	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads .....	50, 10 and 10
Carriage bolts, cut threads, all sizes.....	50 and 10
Eagle carriage bolts.....	65 and 10
Lag bolts .....	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads.....	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.c. and t. nuts, ½ x 4 in., 45, 10 and 5 .....	45, 10 and 5
Larger and longer sizes.....	45, 10 and 5
Bolt ends with hot-pressed nuts.....	60, 10 and 10
Bolt ends with cold-pressed nuts.....	45, 10 and 5
Hot-pressed nuts, blank and tapped, square, 4.00c. per lb. off list .....	4.00c. per lb. off list
Hot-pressed nuts, blank or tapped, hexagons, 4.40c. per lb. off list .....	4.40c. per lb. off list
C.p.c. and t. square or hex. nuts, blank or tapped .....	4.10c. per lb. off list
Washers* .....	6.75c. to 6.50c. per lb. off list

\*F.o.b. Chicago and Pittsburgh.  
The discount on machine, carriage and lag bolts is 5 per cent more than above for car lots. On hot-pressed and cold-pressed nuts the discount is 25c. more per 100 lb. than quoted above for car lots.

Bolts and Nuts	
(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)	
	Per Cent Off List
Semi-finished hexagon nuts:	
½ in. and smaller, U. S. S. ....	80, 10, 10 and 5
¾ in. and larger, U. S. S. ....	75, 10, 10 and 5
Small sizes, S. A. E. ....	80, 10, 10 and 5
S. A. E., ½ in. and larger.....	75, 10, 10 and 5
Stove bolts in packages.....	80, 10 and 5
Stove bolts in bulk.....	80, 10, 5 and 2½
Tire bolts .....	60 and 5

Semi-Finished Castellated and Slotted Nuts	
(Actual freight allowed up to but not exceeding 50c. per 100 lb.)	
(To jobbers and consumers in large quantities)	
	Per 100 Net S.A.E. U.S.S.
¾ in.....	\$0.44 \$0.44
1 in.....	0.515 0.515
1½ in.....	0.62 0.66
2 in.....	0.79 0.90
2½ in.....	1.01 1.05
3 in.....	1.38 1.42
3½ in.....	1.70 1.73
	Per 100 Net S.A.E. U.S.S.
¾ in.....	\$2.35 \$2.40
1 in.....	3.60 3.60
1½ in.....	5.45 5.90
2 in.....	8.90 8.90
2½ in.....	12.60 13.10
3 in.....	18.35 18.35
3½ in.....	21.90 21.90

Larger sizes.—Prices on application.

Large Rivets	
Base per 100 Lb.	
F.o.b. Pittsburgh .....	\$2.50 to \$2.40
F.o.b. Chicago .....	2.60

Small Rivets	
Per Cent Off List	
F.o.b. Pittsburgh .....	70, 10 and 5 to 70 and 10
F.o.b. Cleveland .....	70, 10 and 5 to 70 and 10
F.o.b. Chicago .....	70, 10 and 5 to 70 and 10

Cap and Set Screws	
(Freight allowed up to but not exceeding 50c. per 100 lb.)	
	Per Cent Off List
Milled cap screws.....	80 and 10
Milled standard set screws, case hardened, 80 and 5 .....	80 and 5
Milled headless set screws, cut thread.....	80
Upset hex. head cap screws, U.S.S. thread, 80, 10 and 10 .....	80, 10 and 10
Upset hex. cap screws, S.A.E. thread, 80, 10 and 10 .....	80, 10 and 10
Upset set screws.....	80, 10 and 5
Milled studs .....	70 and 5

## Chicago

### Steel Bookings at High Rate—Steel Output Reaches 87 Per Cent

CHICAGO, March 8.—Bookings of finished steel products for the week just closed were larger than for any like period in the past 12 months with the exception of several weeks last fall when heavy rail contracts were being negotiated. It is significant that orders for practically all steel products are well proportioned to productive capacity so that makers' books are better balanced than for a number of months. Two weeks ago there was a scarcity of wide plate orders, but since that time close to 40,000 tons have been placed and tank building programs that are well advanced call for an additional 15,000 tons.

Following the bulge in specifications in the middle of February, there were two weeks when mill order books grew only in proportion to the steady increase in production, which now has reached close to 87 per cent of ingot capacity for the district. During the past seven days, however, specifications have gained 15 per cent and new buying is noticeably ahead of shipments. Backlogs are slowly creeping up, now extending from four to six weeks, and it is becoming increasingly difficult for small-tonnage buyers to get deliveries except at the convenience of the mills. There are no outstanding signs pointing to larger stocks in the hands of users, but as deliveries tighten, buying interest in future requirements becomes more noticeable.

From the viewpoint of fresh inquiry and actual orders the railroad equipment market is dull. Weather conditions give promise of an early start for the spring building program. Reinforcing bar awards, particularly those specifying bars rolled from old rails, have been fairly numerous.

**Pig Iron.**—Buying of pig iron for second quarter use is progressing steadily. A Milwaukee melter has purchased 2000 tons of foundry iron, and a Chicago user has placed 1000 tons. Lots of average size are being taken at \$20, f.o.b. Chicago furnace. To the west, competition is keen and two orders, one for 600 tons and one for several carloads, have been taken at \$19.50, base Chicago furnace. At Milwaukee users of iron from the Mayville furnaces are favored by a freight differential of 27c. The A furnace at Mayville has been blown out, leaving production in this district at the rate of two weeks ago. Sales so far in March are equal to about one-half the total bookings for February. Shipments are a trifle heavier, but no serious reduction has been made in blast furnace stocks, which are normal for this time of the year.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards:

Northern No. 2 foundry, sil. 1.75 to 2.25 .....	\$20.00
Northern No. 1 foundry, sil. 2.25 to 2.75 .....	20.50
Malleable, not over 2.25 sil. ....	20.00
High phosphorus .....	20.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago .....	27.04
Southern No. 2 (all rail) .....	24.01
Southern No. 3 (barge and rail) ..	22.18
Low phos., sil. 1 to 2 per cent, copper free .....	\$31.50 to 32.50
Silvery, sil. 8 per cent. ....	33.29
Bessemer ferrosilicon, 14 to 15 per cent .....	46.79

**Ferroalloys.**—A charcoal iron furnace in Michigan is now producing spiegeleisen, which is being sold in the Chicago market. The price of domestic spiegeleisen is steady at \$37, Hazzard, Pa., or \$44.76, delivered. Brokers are seeking future orders for English spiegeleisen at \$35, New Orleans. The freight rate to Chicago is \$7.56. Ferromanganese is quiet, and the price is steady at \$107.56, delivered.

We quote 80 per cent ferromanganese, \$107.56, delivered Chicago; 50 per cent ferrosilicon, \$35, delivered; spiegeleisen, 18 to 22 per cent, \$44.76, delivered Chicago.

**Plates.**—Oil refiners have been active in the market, and two contracts for tank plates have brought about

18,000 tons to local mills. Fresh inquiry is large, and oil storage projects that are definitely under way call for at least 15,000 tons. Orders for tank steel during the last two weeks have helped materially in balancing mill schedules, which have been somewhat top-heavy because of the large orders and specifications for the narrow widths, such as are used in railroad car and building column construction. Both new inquiries and contracts for railroad equipment are small, the only business of this kind of note being an order placed by the Burlington with the Bettendorf Co. for 36 suburban coaches. The Great Northern is said to have canceled its inquiry for 500 box cars and is now asking for prices on 500 underframes, which will be used for the construction of cars in its own shops. Plate prices are steady at 2c. to 2.10c., Chicago, the higher quotation being more general than a week ago.

The mill quotation on plates is 2c. to 2.10c. per lb. base, Chicago.

**Structural Material.**—In plain material, specifications and new buying are about normal for this time of the year. In fabricated steel it is noticeable that the bulk of the going tonnage is being diverted to the larger shops. The slowing down in awards late in the fall brought out lower prices for fabricated material, and the prospect of a good demand in the early spring has failed to add strength to the situation. Building permits for Chicago in January and February reached \$56,800,000, a larger total than for any similar period on record. The Chicago & North Western has a bridge program that calls for 4000 tons, and the Northern Pacific is asking for prices on 800 tons of bridge work. Plain material is steady at 2c. to 2.10c., Chicago.

The mill quotation on plain material is 2c. to 2.10c. per lb. base, Chicago.

**Bars.**—Mill schedules in mild steel bars are the heaviest in months, and deliveries have been advanced to not less than three weeks for the ordinary run of business. In a few sizes mills are willing to book small orders for fairly prompt delivery, but the bulk of tonnage is being taken for shipments at the convenience of producers. Shipments of mild steel bars to the automobile trade so far in March are fully up to expectations, and in some instances tonnages larger than scheduled are being ordered out. The tendency of soft steel bar prices to strengthen is still in evidence, though the market is properly quotable at 2c. to 2.10c., Chicago. In iron bars books have been opened at 2c., Chicago, but with mills operating on a hand-to-mouth basis and deliveries prompt, users are still disposed to take this commodity as required and to show no interest in future needs. Specifications for alloy steel bars are heavier, and shipments are at 80 to 85 per cent of productive capacity. Second quarter books are open, and contracting on the price basis of the first three months is well under way. Orders for rail steel reinforcing bars have been numerous, and that business combined with a quickening in demand from the general run of users has added materially to mill order books. Although advance buying is more in evidence, by far the larger number of users continue to issue small orders and to demand prompt shipment.

The prices per lb. are: Mild steel bars, 2c. to 2.10c. base, Chicago; common bar iron, 2c. base, Chicago; rail steel bars, 1.90c. to 2c. base, Chicago.

**Reinforcing Bars.**—The tonnage of reinforcing bars up for figures continues to grow. Orders for rail steel reinforcing bars bulk fairly large, noteworthy awards being 650 tons for the Cook County jail and 450 tons for an apartment building. Orders for billet steel reinforcing bars are confined almost wholly to lots of less than 100 tons each. Bending shops are not engaged at over 45 per cent, but in view of an encouraging volume of prospective business, prices are holding steady at 2.30c. to 2.75c., Chicago warehouse, for billet steel reinforcing bars and 2.10c. to 2.55c., Chicago, for rail steel bars. New contracts and fresh inquiries are shown on page 757.

**Bolts, Nuts and Rivets.**—Specifications are lighter from practically all sources with the exception of the automobile industry. Contracts for the second quarter have not been submitted to buyers because sellers hope to take forward business on the basis of the new list, which is in the course of preparation.



**Wire Products.**—Prices of wire products are being fairly well maintained, there being less evidence of shading than at the turn of the month. Spring building activities have resulted in a good demand for nails, and jobbers continue to send in orders that are somewhat more liberal than during February. Heavy snows this winter in the Northwest give promise of fair crop conditions in that section of the country and jobbers are adding to stocks in the expectation of an increase in demand. Specifications from the manufacturing trade are slowly accumulating, and second quarter contracting has gained headway during the week. Production in some lines has been speeded up to keep mill stocks well balanced. Mill prices are shown on page 741.

**Warehouse Business.**—Orders to warehouses are showing a steady increase. No. 8 black annealed wire is now being quoted at \$3.20 per 100 lb. and common and cement coated nails at \$2.95, base, per keg.

**Rails and Track Supplies.**—A Middle Western railroad is inquiring for 5000 tons of steel tie plates. Rail production is steady at 85 per cent of capacity. In most cases, this has met the requirements of the railroads, but here and there demands have arisen for more prompt delivery. Several users have placed small lots of iron tie plates.

Standard Bessemer and open-hearth rails, \$43; light rails, rolled from billets, \$36 to \$38 per gross ton, f.o.b. maker's mill.

Standard railroad spikes, 2.90c. per lb. mill; track bolts with square nuts, 3.90c. mill; steel tie plates, 2.35c. mill; angle bars, 2.75c. mill.

**Cast Iron Pipe.**—Several sizable orders have been placed by public utilities, and numerous small municipalities are contracting for early spring requirements. Current business consists mainly of small orders, which are being taken at \$37, Birmingham, or \$45.20, delivered, for 6-in. and larger diameters. Quotations of \$36, Birmingham, are not uncommon on heavy tonnages. Shipments against contracts with cities are moving in good volume, but orders placed by contractors are being held up until such time as weather conditions will permit placing pipe in the ground. Dearborn, Mich., is reported to have divided 2000 tons of 6, 8 and 12-in. pipe between the American Cast Iron Pipe Co. and the United States Cast Iron Pipe & Foundry Co. James B. Clow & Sons have been awarded 800 tons of 4 to 16-in. Classes B and C, for Barborton, Ohio. Fresh inquiry includes 100 tons of 2, 4 and 6-in. Class B pipe for Medina, Ohio, 100 tons of 6-in. Class C for Springfield, Ill., and 477 tons of 36-in. plain straight pipe and 10 tons of special castings for Milwaukee.

We quote per net ton, delivered Chicago, as follows: Water pipe, 4-in., \$48.20 to \$49.20; 6-in. and over, \$44.20 to \$45.20; Class A and gas pipe, \$4 extra.

**Sheets.**—This has been another good week from the viewpoint of orders for sheets. Users are showing greater interest in future requirements, but mills are not satisfied with present prices and are reluctant to commit themselves beyond the end of April. One producer reports that it is holding to 2.35c. to 2.45c., base

mill, for blue annealed sheets and 3c. to 3.10c. on black sheets, but these ranges have not become common in the Chicago district. The Inland Steel Co. started this week with full capacity at Indiana Harbor, but still has five mills out at Milwaukee. Production for the district is close to 85 per cent of capacity.

Chicago delivered prices from mill at 3.00c. to 3.10c. for No. 24 black; 2.35c. to 2.40c. for No. 10 blue annealed; 3.90c. to 4c. for No. 24 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

**Coke.**—Shipments of by-product foundry coke are steady, and prices are firm. The threat of a coal strike has been given little attention so far by buyers.

**Hot-Rolled Strip.**—Automobile frame makers are busier and have placed sizable orders for hot-rolled strip. Business placed this week develops that prices for narrow strip range from 2.40c. to 2.60c., Chicago, and that as low as 2.30c. can be done in widths over 6 in.

**Old Material.**—The demand from consumers of scrap is light, and for the most part orders placed disclose a selling price at or near the lower range of present quotations. Many items on the list are inactive, with prices nominal. In view of the threatened coal strike the railroads are turning their attention toward the storage of coal and are diverting cars from scrap hauling service. The net result is that railroad shipments of scrap are lighter, much to the satisfaction of dealers, who, being pressed by tonnages appearing on track, were more inclined to sell at lower prices than to add to stocks in yards. Old contracts are being filled rapidly, and trading among dealers and brokers is in smaller volume than a week ago. The melt of scrap in this territory is well maintained, and users are offering practically no resistance to the acceptance of shipments when due. At the same time buyers are of the firm belief that the supply of scrap such as they want is ample, and they are insisting that shipments conform to specifications. Dealers are having some difficulty in obtaining borings to cover old contracts taken at \$11 per gross ton. Small offerings at \$10.50 are being turned down by users. The Chicago & Alton is advertising a list of 1000 tons.

We quote delivered in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items, except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

#### Per Gross Ton

Heavy melting steel.....	\$12.75 to \$13.25
Frogs, switches and guards, cut apart, and miscellaneous rails.....	14.25 to 14.75
Shoveling steel.....	12.75 to 13.25
Hydraulic compressed sheets.....	11.25 to 11.75
Drop forge flashings.....	9.50 to 10.00
Forged cast and rolled steel car-wheels.....	16.25 to 16.75
Railroad tires, charging box size.....	17.00 to 17.50
Railroad leaf springs, cut apart.....	16.25 to 16.75
Steel couplers and knuckles.....	15.50 to 16.00
Coil springs.....	16.50 to 17.00
Low phosphorus punchings.....	15.50 to 16.00
Axle turnings, foundry grade.....	13.00 to 13.50
Axle turnings, blast fur. grade.....	10.00 to 10.50
Relaying rails, 56 to 60 lb.....	25.50 to 26.50
Relaying rails, 65 lb. and heavier.....	26.00 to 31.00
Rerolling rails.....	15.50 to 16.00
Steel rails, less than 3 ft.....	16.50 to 17.00
Iron rails.....	13.50 to 14.00
Cast iron borings.....	10.00 to 10.50
Short shoveling turnings.....	10.00 to 10.50
Machine shop turnings.....	7.00 to 7.50
Railroad malleable.....	16.00 to 16.50
Agricultural malleable.....	14.75 to 15.25
Angle bars, steel.....	14.50 to 15.00
Cast iron carwheels.....	15.00 to 15.50

#### Per Net Ton

No. 1 machinery cast.....	16.50 to 17.00
No. 1 railroad cast.....	15.50 to 16.00
No. 1 agricultural cast.....	14.00 to 14.50
Stove plate.....	13.25 to 13.75
Grate bars.....	12.75 to 13.25
Brake shoes.....	12.00 to 12.50
Iron angle and splice bars.....	14.00 to 14.50
Iron arch bars and transoms.....	18.50 to 19.00
Iron car axles.....	21.50 to 22.00
Steel car axles.....	17.00 to 17.50
No. 1 railroad wrought.....	12.00 to 12.50
No. 2 railroad wrought.....	11.50 to 12.00
No. 1 busheling.....	16.25 to 16.75
No. 2 busheling.....	7.00 to 7.50
Locomotive tires, smooth.....	16.00 to 16.50
Pipes and flues.....	8.00 to 8.50

#### Warehouse Prices, f.o.b. Chicago

Base per Lb.

Plates and structural shapes.....	3.10c.
Mild steel bars.....	3.00c.
Reinforcing bars, billet steel.....	2.30c. to 2.75c.
Cold-finished steel bars and shafting—	
Rounds and hexagons.....	3.60c.
Flats and squares.....	4.10c.
Hoops.....	4.15c.
Bands.....	3.65c.
No. 24 black sheets.....	3.05c. to 3.15c.
No. 10 blue annealed sheets.....	2.40c. to 2.45c.
No. 24 galvanized sheets.....	3.90c. to 4.00c.
Standard railroad spikes.....	3.55c.
Track bolts.....	4.55c.
Structural rivets.....	3.50c.
Boiler rivets.....	3.70c.

Per Cent Off List

Machine bolts.....	50 and 5
Carriage bolts.....	47½
Coach or lag screws.....	55 and 5
Hot-pressed nuts, squares, tapped or blank.....	3.25c. off per lb.
Hot-pressed nuts, hexagons, tapped or blank.....	3.75c. off per lb.
No. 8 black annealed wire, per 100 lb.....	\$3.20
Common wire nails, base per keg.....	2.95
Cement coated nails, base per keg.....	2.95

## New York

### Pig Iron Demand Tapers—Sheet Prices Are Advanced

NEW YORK, March 8.—Sales of pig iron in this territory in the past week totaled about 15,000 tons, or nearly as much as was placed in the previous week. One-third of the total, 5000 tons, was basic bought from a Buffalo furnace by a Bridgeport, Conn., plant. Demand for foundry grades is tapering, because most large buyers have covered their needs through second quarter and in some cases into the third. The price situation is unchanged, with New York State foundry irons available at \$17, Buffalo, and eastern Pennsylvania at \$20.50, furnace. Apparently little iron is selling at \$16.50, Buffalo, although silicon differentials continue to be waived on the higher grades of foundry. Furnaces have accumulated fair bookings in the recent buying movement, and an eastern New York stack has withdrawn from the market. Since few large inquiries are likely to come into the market for some time, there will be less incentive to shade prices. The last recent inquiry of size that is still pending, 3870 tons for the Worthington Pump & Machinery Corporation, will probably be closed within the next day or two. While the market has a better tone, the trade does not look for much of an advance in prices in the near future. Some producers still have generous stocks, and production has been increased by the blowing in of a large stack at Buffalo. Moreover, the shipment of iron by barge will soon be resumed. If present mild weather continues for another 48 hr., the Hudson River is expected to open up for navigation as far as Albany. The Farrel Foundry & Machine Co., Ansonia, Conn., has bought 500 tons of No. 1X foundry for April and May delivery. A melter in northern Vermont is in the market for 500 to 1000 tons of No. 2X. No. 1X Dutch iron is still being offered at \$22.50, duty paid, notwithstanding the advance in duty March 25.

We quote per gross ton delivered in the New York district as follows, having added to furnace prices, \$1.39 to \$2.52 freight from eastern Pennsylvania, \$4.91 from Buffalo and \$5.54 from Virginia:

East. Pa. No. 2 fdy., sil. 1.75 to 2.25	\$21.89 to \$23.02
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	22.39 to 23.52
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	22.89 to 24.02
Buffalo fdy., sil. 1.75 to 2.25 (all rail)	21.91 to 22.41
No. 2 Virginia fdy., sil. 1.75 to 2.25	26.54 to 27.04

**Ferroalloys.**—Specifications on contract for ferromanganese continue good, but new business is confined mostly to carload and small lots, in which there is a moderate business. The inquiry for 300 to 500 tons from one consumer, mentioned last week, is expected to be contracted for this week. Production by American furnaces for February was 24,560 gross tons, or larger than the 22,309 tons made in February, last year. Prices for both ferromanganese and spiegel-eisen continue unchanged.

**Finished Steel.**—Some of the leading manufacturers of sheets have announced a new schedule of prices, effective at once, and it is thought that other makers will follow their action because of the unprofitable level at which sheets recently have been sold. Prior to the advance consumers were given an opportunity to take advantage of outstanding quotations, and this drove a considerable volume of business to the mills, so much so that some producers have larger backlogs and better operating schedules than at any time this year. The newly announced prices are 2.25c. for blue annealed, 2.90c. for black and 3.75c. for galvanized sheets, all f.o.b. Pittsburgh. New extras on blue annealed sheets may also be announced, and will be 10c. per 100 lb. on Nos. 11 and 12 gage, instead of 5c.; 20c. extra on Nos. 13 and 14 gage, an advance from 10c., and 30c. on Nos. 15 and 16 gage, on which the extra was 20c. Some of the makers of cold-rolled strip steel have also taken a stand for higher prices and have announced a minimum of 3c. per lb., Pittsburgh or Cleveland. The market on ordinary lots recently went as low as 2.80c.,

while tube makers received even lower prices. Most of the business in sheets just prior to the advance was taken at 2.15c. to 2.20c. for blue annealed, 2.75c. or 2.80c. for black and at 3.60c. and 3.65c. for galvanized. This is the first effort to put an end to the demoralization of prices which has come since the first of the year. One of the most disturbed markets just now is structural steel. On ordinary lots most of the mills quote 1.80c. to 1.90c., Pittsburgh, but on larger tonnages prices are sometimes \$2 or \$3 a ton lower. Hot-rolled strips are not being sold in any quantity at the new quotations of 2.10c. to 2.30c., Pittsburgh. Presumably many buyers covered their requirements before the advance. The beginning of March has brought little change in the volume of buying. Business is sluggish in most lines. Structural steel awards were not large in the past week, but the Structural Steel Board of Trade of New York reports that bookings in the metro-

### Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and structural shapes	3.34c.
Soft steel bars and small shapes	3.24c.
Iron bars	3.24c.
Iron bars, Swedish charcoal	7.00c. to 7.25c.
Cold-finished steel shafting and screw stock	4.00c.
Rounds and hexagons	4.50c.
Flats and squares	4.50c.
Cold-rolled strip, soft and quarter hard	5.75c.
Hoops	4.49c.
Bands	3.99c.
Blue annealed sheets (No. 10 gage)	3.89c.
Long terme sheets (No. 24 gage)	5.80c.
Standard tool steel	12.00c.
Wire, black annealed	4.50c.
Wire, galvanized annealed	5.15c.
Tire steel, 1½ x ¼ in. and larger	3.30c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.65c.
Open-hearth spring steel, bases	4.50c. to 7.00c.

### Per Cent Off List

Machine bolts, cut thread	40, 10 and 10
Carriage bolts, cut thread	30 and 10
Coach screws	40, 10 and 10
Boiler Tubes—	Per 100 Ft.
Lap welded steel, 2-in.	\$17.33
Seamless steel, 2-in.	20.24
Charcoal iron, 2-in.	25.00
Charcoal iron, 4-in.	67.00

### Discounts on Welded Pipe

Standard Steel—	Black	Galv.
½-in. butt.	46	29
¾-in. butt.	51	37
1-in. butt.	53	39
2½-6-in. lap.	48	35
7 and 8-in. lap.	44	17
11 and 12-in. lap.	37	12
Wrought Iron—		
½-in. butt.	4	+19
¾-in. butt.	11	+9
1-1½-in. butt.	14	+6
2-in. lap.	5	+14
3-6-in. lap.	11	+6
7-12-in. lap.	3	+16

### Tin Plate (14 x 20 in.)

	Prime	Seconds
Coke, 100 lb. base box	\$6.45	\$6.20
Charcoal, per box—	A	AAA
IC	\$9.70	\$12.10
IX	12.00	14.25
IXX	13.90	16.00

### Terne Plate (14 x 20 in.)

IC—20-lb. coating	\$10.00 to \$11.00
IC—30-lb. coating	12.00 to 13.00
IC—40-lb. coating	13.75 to 14.25

### Sheets, Box Annealed—Black, C. R. One Pass

	Per Lb.
Nos. 18 to 20	4.00c.
No. 22	4.15c.
No. 24	4.20c.
No. 26	4.30c.
No. 28*	4.45c.
No. 30	4.70c.

### Sheets, Galvanized

	Per Lb.
No. 14	4.35c. to 4.60c.
No. 16	4.45c. to 4.70c.
No. 18	4.60c.
No. 20	4.75c.
No. 22	4.80c.
No. 24	4.95c.
No. 26	5.20c.
No. 28*	5.45c.
No. 30	5.85c.

\*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.



politan district in February were 53,900 tons, exclusive of bridges, subways and types of work other than buildings. Nearly half of this total was for one building. Awards in January amounted to 50,100 tons.

We quote mill shipments, New York delivery, as follows: Soft steel bars, 2.24c. per lb.; plates, 2.14c. to 2.24c.; structural shapes, 2.14c. to 2.24c.; bar iron, 2.14c. to 2.24c.

**Reinforcing Bars.**—The Kalman Steel Co. will furnish 500 tons of concrete bars for an office building and service station in Manhattan. No other sizable jobs have been let in the last few days, but the volume of small orders is increasing as spring building operations develop. Included in the list of new jobs on which estimates are being prepared is a loft building at Varick and Vandam Streets, which will require approximately 750 tons of bars. There has been no change in prices.

Mill prices on billet steel reinforcing bars are: 2c. per lb. base, Pittsburgh. Reinforcing bars out of New York warehouse are quoted at 3.15c. per lb. delivered at job, and out of Youngstown warehouse at 2.50c., Youngstown, or 2.87½c., delivered New York.

**Cast Iron Pipe.**—The market is quiet, with a number of awards pending but little business placed in the past week. The Department of Purchase, New York, has not yet placed the order for the 10,000 tons of water pipe, bids on which were recently opened. Award of the 3000 tons of pipe for Albany, N. Y., on which B. Nicoll & Co., representing the Pont-a-Mousson works, were low bidder, is also pending. Quotations continue low, although there is a slight tendency toward firmness on the smaller sizes.

We quote pressure pipe per net ton, f.o.b. New York in carload lots, as follows: 6-in. and larger, \$46.69 to \$48.60; 4-in. and 5-in., \$51.60 to \$53.60; 3-in., \$61.60 to \$63.60; with \$5 additional for Class A and gas pipe.

**Warehouse Business.**—A larger volume of business is developing, particularly in structural material. Orders are still limited to a few tons, but are becoming more numerous with spring requirements increasing. Prices of blue annealed sheets are still soft, with business small. Black and galvanized sheets are fairly firm at the present level of prices, and sellers show no inclination to shade except on sizable orders. Total business for the present month will probably be larger than for some time.

**Old Material.**—While prices of all grades continue soft, brokers filling contracts are in many cases offering the equivalent of the current sales price to consumers. This is, in part, because of old contracts at higher prices. No. 1 heavy melting steel is being purchased at \$14.50 per ton, delivered eastern Pennsylvania. Yard steel is quoted at \$12 to \$12.25 per ton, delivered, which is in most cases the current price to consumers. Borings and turnings are active, with purchases by brokers at \$10.50 to \$11 per ton, delivered Bethlehem, and \$11 per ton, delivered Conshohocken, Pa. Stove plate is quiet, with small shipments of foundry grade to a Bridgeport consumer at \$12.50 per ton, delivered. Heavy breakable cast is still being shipped to a Harrisburg user at \$15.50 per ton, delivered, and to a foundry at Florence, N. J., at \$16 per ton, delivered.

Buying prices per gross ton, New York, follow:

No. 1 heavy melting steel.....	\$11.00 to \$11.85
Heavy melting steel (yard).....	8.25 to 8.50
Rails for rolling.....	11.50 to 12.00
Steel car axles.....	16.00 to 16.50
Iron car axles.....	24.00 to 24.50
No. 1 railroad wrought.....	12.50 to 13.50
No. 1 yard wrought, long.....	11.50 to 12.50
Forge fire.....	8.00 to 8.50
Cast borings (steel mill).....	8.00 to 8.25
Cast borings (chemical).....	12.50 to 13.00
Machine shop turnings.....	7.75 to 8.25
Mixed borings and turnings.....	7.50 to 8.00
Iron and steel pipe (1 in. diam., not under 2 ft. long).....	9.25 to 9.75
Stove plate (steel mill).....	8.50 to 8.75
Stove plate (foundry).....	10.00 to 10.50
Locomotive grate bars.....	9.50 to 10.00
Malleable cast (railroad).....	12.50 to 13.00
Cast iron carwheels.....	11.00 to 11.50
No. 1 heavy breakable cast.....	11.75 to 13.00

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast.....	\$15.00 to \$15.50
No. 1 heavy cast (columns, building materials, etc.), cupola size	13.50 to 14.00
No. 2 cast (radiator, cast boilers, etc.).....	12.50 to 13.00

**Coke.**—Demand for both foundry and furnace grade

continues moderate, with no apparent desire on the part of consumers to increase present stocks in view of the prospective coal strike. With 80,000,000 tons of coal at the mines and the season of light consumption approaching, a serious shortage is evidently not expected, at least for many months. Foundry coke continues at \$4.50 to \$5 per ton, Connellsville, with a few standard brands at slightly higher prices. Furnace grade ranges from \$3.50 to \$4 per ton, Connellsville. Delivered prices of foundry coke are: To northern New Jersey, \$9.03 to \$9.53; New York or Brooklyn, \$9.79 to \$10.29; Newark or Jersey City, N. J., \$8.91 to \$9.41 per ton. By-product foundry coke ranges from \$9.59 to \$10.77 per net ton, delivered Newark or Jersey City, N. J.

## Cleveland

### Another Advance in Pig Iron—Structural Outlook More Promising

CLEVELAND, March 8.—March has started out with a good volume of business in most lines of finished steel, and some of the mills report a gain in orders over the closing week in February. While some second quarter contracts have been taken, few consumers have shown an interest in contracts. Many made commitments early in the year for enough material to carry them into the second quarter.

Specifications from the automotive industry are good, although reports indicate that the production of cars is not so large as at this time a year ago. The outlook in the structural field has become more promising, although most of the work in prospect is outside the immediate Cleveland territory. An inquiry has come out for the second wing of the Public Auditorium, Cleveland, and both wings that are to be placed shortly will require 2500 tons of steel. A Cleveland manufacturer of handling equipment has taken a coal-handling plant in Brooklyn, N. Y., requiring 1900 tons of steel, which will be supplied by a Pittsburgh district mill.

Outside mills are holding firmly to 1.90c., Pittsburgh, for steel bars, plates and structural material and are taking a limited amount of small-lot business at 2c. The local mill price of steel bars is unchanged at 1.90c., Cleveland.

**Pig Iron.**—Buying of foundry and malleable iron has tapered off. However, two round lots of basic iron were taken in the past week by Cleveland interests, which brought their total sales up to 60,000 tons, or the same amount as during the previous week. A decrease in activity was expected, as most consumers are covered for the second quarter. Some inquiry is still coming out for the third quarter, but local producers will not quote for that delivery. The market has a firm tone, but the only definite price change during the week was an advance by Cleveland producers of 50c. on foundry and malleable for local delivery to \$19.50 at furnace, this being the second 50c. a ton advance in two weeks. With the reestablishment of the Valley market at \$18.50, the present Cleveland price is low enough to shut out Valley competition in Cleveland. For outside shipment \$18, Cleveland, is still being quoted, and some sales at that price were made

#### Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and structural shapes.....	3.00c.
Mild steel bars.....	3.00c.
Reinforcing steel bars.....	2.75c. to 3.00c.
Cold-finished rounds and hexagons.....	3.90c.
Cold-finished flats and squares.....	4.40c.
Hoops and bands.....	3.65c.
No. 24 black sheets.....	3.65c.
No. 10 blue annealed sheets.....	3.25c.
No. 24 galvanized sheets.....	4.50c.
Cold-rolled strip.....	5.95c.
No. 9 annealed wire, per 100 lb.....	\$2.90
No. 9 galvanized wire, per 100 lb.....	2.35
Common wire nails, base, per keg.....	2.90

\*Net base, including boxing and cutting to length.

in Indiana during the week. However, one local producer is on an \$18.50 base for outside shipment and reports some sales at that price. In Michigan the market has a firmer tone, although \$19, furnace, is still the ruling price. Basic sales include a 12,000-ton lot for shipment from a Pittsburgh district furnace to a consumer in the same district. The General Motors Corporation has taken no action as yet on its additional pig iron requirements and may not do so for some time, as its additional foundry capacity will not be ready for operation before early summer. With its increased capacity, its expected annual requirements are placed at 175,000 tons. At present it is taking about half that amount on a long-term contract.

The Ohio Steel Foundry Co., Lima, Ohio, has purchased 1500 tons of basic iron from a Lake furnace.

Quotations below are per gross ton and except on basic and low phosphorus iron, are delivered Cleveland, including a 50c. switching charge for local iron. Ohio silvery and Southern iron prices are based on a \$3 freight rate from Jackson and \$6 from Birmingham:

Basic, Valley furnace.....	\$18.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25..	20.00
Southern fdy., sil. 1.75 to 2.25....	24.00
Malleable .....	20.00
Ohio silvery, 8 per cent.....	31.50
Standard low phos., Valley furn.	28.00

**Iron Ore.**—The Ford Motor Co. has sent out an inquiry for 385,000 tons of iron ore, or approximately the same amount that it bought last year. The inquiry includes more non-Bessemer ore and less high phosphorus ore than it has inquired for heretofore, the company's requirements of the former having been increased because of the operations of its open-hearth plant. The inquiry is for 175,000 tons of non-Bessemer ore and the remainder in various grades. Producers have not yet quoted on the Ford inquiry, and the business may not be placed for several weeks, as ore firms seem in no hurry to name prices.

Shipments from Lake Erie docks showed a sharp increase during February and amounted to 631,479 tons, as compared with 553,511 tons during the same month a year ago. The dock balance is now slightly less than at the same time a year ago, being 6,062,608 on March 1 as compared with 6,083,791 on March 1, 1926.

**Bolts, Nuts and Rivets.**—The bolt and nut business shows further improvement, and prices are firm. There has been a delay in issuing the new price lists, which are not expected to be out until next week. Rivet manufacturers are talking of an advance for the second quarter to compensate for the recent waiving of the \$4 a ton differential on boiler rivets. Those that specialize on boiler rivets claim that there is no profit in them at the present price.

**Sheets.**—With a good volume of orders from the automotive industry and a fair demand from other sources, most of the mills are comfortably filled with business. However, there are enough producers in need of tonnage to keep prices in an unsettled condition. This is particularly true of black sheets, which are very irregular with reports of sales at as low as 2.60c., Pittsburgh. Quotations for the second quarter of 2.70c., Pittsburgh, to barrel manufacturers and of 2.80c. to Detroit automobile companies are reported. For early shipment 2.75c., Pittsburgh, is a rather common quotation. On blue annealed sheets there is a range of from 2.10c. to 2.25c., Ohio mill. Galvanized sheets range from 3.70c. to 3.75c., mill. Producers are quoting present prices for delivery into next month but, as a rule, have not named second quarter prices.

**Coke.**—A fair number of consumers are placing second quarter contracts for foundry coke, but there is virtually no spot demand. Standard Connellsville foundry coke ranges from \$4.25 to \$5 ovens, for prompt shipment. Contracts for a premium brand are being taken at \$5.50. On heating coke \$3.25, ovens, is the ruling quotation.

**Strip Steel.**—While some of the mills are quoting 12-in. and wider strip, No. 12 gage and heavier, on the plate base of 1.90c., this price has not been generally placed in effect and considerable irregularity still exists on wide strip, although minimum prices are somewhat higher than a few weeks ago. Some business was taken during the week at 1.75c., base. An effort is be-

ing made to put cold-rolled strip steel on a 3c., Cleveland, base with no differential for tubing and with a price of 4.50c. for No. 20 gage fender stock. Some mills are quoting those prices for the second quarter. However, cold-rolled strip is still being offered at 2.85c., Cleveland.

**Semi-Finished Steel.**—Makers are holding to \$34, Cleveland and Youngstown, for sheet bars, billets and slabs, and some mills are talking of trying to get an advance for the second quarter. Specifications are good.

**Reinforcing Bars.**—The award of 700 tons has been made for a warehouse for the Erie Railroad in Youngstown. The steel will be furnished by a Youngstown mill. Prices are unchanged at 1.70c., to 1.80c., mill, for rail steel bars.

**Warehouse Business.**—The demand is fair except for sheets, and prices are firm. A leading sheet jobber has advanced blue annealed \$2 a ton to the same basis quoted by other warehouses.

**Old Material.**—The market shows a little more life than recently in that there is some quiet buying by consumers of small lots offered at attractive prices. Mills are disposed to follow a hand-to-mouth policy in buying rather than to place round tonnages. Prices are holding at recent levels. However, the supply of scrap is large, and the market lacks firmness. Dealers are still buying heavy melting steel and blast furnace scrap for delivery to a local mill at the quotations shown below. A Valley district mill purchased a small tonnage of compressed sheet steel scrap during the week at \$15.50.

We quote per gross ton, delivered consumers' yards in Cleveland:

Heavy melting steel No. 1.....	\$14.50 to \$14.75
Heavy melting steel No. 2.....	14.00 to 14.25
Rails for rolling.....	16.25 to 16.50
Rails under 3 ft.....	18.00 to 18.50
Low phosphorus billet, bloom and slab crops .....	18.00 to 18.50
Low phosphorus sheet bar crops .....	16.50 to 17.00
Low phosphorus plate scrap.....	16.00 to 16.50
Low phosphorus forging crops.....	16.50 to 17.00
Cast iron borings.....	11.50 to 11.75
Machine shop turnings.....	9.00 to 9.25
Mixed borings and short turnings .....	11.50 to 11.75
Compressed sheet steel.....	12.75 to 14.25
No. 1 railroad wrought.....	11.50 to 12.00
No. 2 railroad wrought.....	14.00 to 14.50
Railroad malleable .....	15.50 to 16.00
Light bundled sheet stampings.....	12.00 to 12.50
Steel axle turnings.....	12.50 to 13.00
No. 1 cast.....	16.00 to 16.50
No. 1 busheling (new).....	13.00 to 13.25
No. 2 busheling.....	11.50 to 11.75
Drop forge flashings, 15 in. and under .....	14.00 to 14.50
Railroad grate bars.....	12.00 to 12.50
Stove plate .....	12.00 to 12.50
Pipes and flues.....	10.00 to 10.50

## Philadelphia

### Buffalo Competition Keener in Eastern Pennsylvania Pig Iron Market

PHILADELPHIA, March 8.—March gives promise of being a better month than February in the volume of steel sales. The demand for sheets, structural shapes and some other products has improved slightly. Steel bars are one of the slowest moving items. A good deal of business in sheets was booked prior to last week's advance to 2.25c. on blue annealed, 2.90c. on black and 3.75c. on galvanized.

The eastern Pennsylvania pig iron situation would be strong were it not for the increasing competition of Buffalo furnaces in what has long been considered almost exclusive territory for the furnaces of this district. The extent to which eastern Pennsylvania furnaces have gone to meet Buffalo competition is not great, however, owing to the fact that there is very little iron to be sold for second quarter by nearby producers.

Nothing has occurred to stir the scrap market from the inertia of recent weeks. Prices remain low and demand is moderate and as a rule easily supplied.

**Pig Iron.**—A recent reduction of 50c. a ton in the freight rate on pig iron from Buffalo to points on the



Reading Railroad in eastern Pennsylvania has enabled Buffalo pig iron to penetrate to within about 60 miles of Philadelphia at delivered prices easily competitive with eastern Pennsylvania iron. This invasion, while not now having a serious effect because eastern Pennsylvania furnaces are well sold through second quarter, is nevertheless regarded with some apprehension for the future when a different situation may exist. Many points which hitherto had a freight rate of \$4.91 from Buffalo now obtain a rate of \$4.41. Thus, with iron selling at \$17, base Buffalo, for foundry grades, the delivered price of Buffalo iron is \$21.41. In the immediate Philadelphia district eastern Pennsylvania furnaces are maintaining quotations at \$21, base, which puts them out of the running on much of the business which has recently been placed. One or two Buffalo furnaces have within the past week made an effort to obtain a base price of \$17.50, but with what success is not yet apparent. There is an expectation among pig iron producers that the strike of soft coal miners scheduled for April 1 will almost immediately be reflected in the coke market, and this in turn may influence pig iron prices. An advance may be put into effect before the end of the month on eastern Pennsylvania iron for second quarter. Among the week's sales was 12,000 tons of basic iron to an Eastern steel company at \$21, delivered.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to \$1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	\$21.76 to \$22.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	22.26 to 22.76
East. Pa. No. 1X.....	22.76 to 23.26
Basic, delivered eastern Pa.....	21.00 to 21.39
Gray forge.....	21.00 to 21.50
Malleable.....	22.50 to 23.00
Standard low phos. (f.o.b. New York State furnace).....	25.00
Copper bearing low phos. (f.o.b. furnace).....	25.00 to 26.00
*Virginia No. 2 plain, 1.75 to 2.25 sil.	26.17 to 26.67
*Virginia No. 2X, 2.25 to 2.75 sil.	26.67 to 27.17

\*The freight rate from Virginia furnaces to Philadelphia is \$5.17 per gross ton.

**Ferromanganese.**—Small sales of English ferromanganese have been made at \$100, seaboard. Most consumers have covered their requirements for the first half.

**Billets.**—Users of billets are making efforts to obtain price concessions. The usual quotations are \$34, Pittsburgh, for rerolling billets and \$40 for forging billets, but offers of \$33 have been made to mills by consumers.

**Plates.**—Orders for plates show no gain, but business is holding its own. Mill operations in the East continue at about the same average as since the first of the year, ranging from 50 to 60 per cent. It appears that the market is firmer than it was a few weeks ago. Some of the larger buyers, such as car builders and shipbuilders, are obtaining the usual concessions, but other consumers are paying 1.90c., Pittsburgh.

#### Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Tank steel plates, ¼-in. and heavier.....	2.80c. to 3.00c.
Tank steel plates, ½-in.....	3.00c. to 3.20c.
Structural shapes.....	2.65c. to 3.00c.
Soft steel bars, small shapes and iron bars (except bands).....	2.80c. to 3.20c.
Round-edge iron.....	3.50c.
Round-edge steel, iron finished, 1½ x 1½ in.....	3.50c.
Round-edge steel, planished.....	4.30c.
Reinforcing steel bars, square, twisted and deformed.....	3.00c.
Cold-finished steel, rounds and hexagons.....	4.00c.
Cold-finished steel, squares and flats.....	4.50c.
Steel hoops.....	4.00c. to 4.25c.
Steel bands, No. 12 gage to ½-in., inclusive.....	3.75c. to 3.90c.
Spring steel.....	5.00c.
No. 24 black sheets.....	4.15c.
No. 10 blue annealed sheets.....	2.30c.
No. 24 galvanized sheets.....	5.10c.
Diamond pattern floor plates—	
¼-in.....	5.30c.
½-in.....	5.50c.
Rails.....	2.20c.
Swedish iron bars.....	6.60c.
Tool steel.....	8.50c.

**Structural Shapes.**—A gain in the volume of building construction is giving to structural mills a larger volume of orders, but the price situation does not show a corresponding improvement. Fabricated steel prices are low, competition for tonnage among some of the larger fabricators having reached a point where there is admittedly little or no profit in the jobs taken. Efforts of these fabricators to pass along some of their concessions to the mills are not without result. Ordinary lots of shapes are being quoted at 1.80c. to 1.90c., Pittsburgh, but reductions of \$2 or \$3 a ton are not infrequent on the larger tonnages.

**Bars.**—The demand for steel bars is sluggish. Bar mills need considerably more tonnage for satisfactory operation. There has been a slight improvement in the demand for concrete reinforcing bars, but the gain has not been as large as is to be expected considering that this is the season for construction activities to expand. Quotations seem to be well maintained at 1.90c., Pittsburgh, for carload lots or more, with some mills asking 2c. for small lots.

**Sheets.**—Based on a careful study which has been made in recent months as to cost of producing the lighter gages of blue annealed sheets, a new schedule of extras may be adopted soon by some of the leading makers. This will mean an advance of \$1 a ton on Nos. 11 and 12 gages and \$2 a ton on Nos. 13 to 16, inclusive. The advance in sheet prices put into effect last week has been adopted by practically all mills, but consumers were given an opportunity to send in orders against outstanding quotations.

**Warehouse Business.**—Keen competition for orders for steel bars has again developed among local jobbers, and sales have been made at figures below 2.80c. per lb. Some of the bars being sold at these prices are of foreign origin, but domestic bars are included.

**Imports.**—Last week's imports were as follows at Philadelphia: Structural steel from Belgium, 528 tons; hoops and bands from Belgium, 35 tons; hoops and bands from England, 61 tons; steel bars from Belgium, 97 tons; steel bars from the Netherlands, 231 tons; iron bars from Belgium, 37 tons.

**Old Material.**—Scrap prices continue weak but are virtually unchanged as compared with a week ago. Consumers are buying moderately, and material is coming out so freely that there seems to be nothing in sight to give the market any strength. The only grade that is firmer is heavy breakable cast, which has been sold to steel plants at \$15.50 and \$16, delivered.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel.....	\$14.50 to \$16.00
Scrap T rails.....	14.00 to 14.50
No. 2 heavy melting steel.....	12.50 to 13.50
Steel rails for rolling.....	16.50 to 17.00
No. 1 low phos., heavy, 0.04 per cent and under.....	19.50 to 20.00
Couplers and knuckles.....	17.00 to 17.50
Rolled steel wheels.....	17.00 to 17.50
Cast iron carwheels.....	16.00 to 16.50
No. 1 railroad wrought.....	17.00 to 17.25
No. 1 forge fire.....	12.50 to 13.00
Bundled sheets (for steel works).....	11.50
No. 1 blast furnace scrap.....	10.50 to 11.00
Machine shop turnings (for steel works).....	11.50
Machine shop turnings (for rolling mill).....	12.00 to 12.50
Heavy axle turnings (or equivalent).....	13.50 to 14.00
Cast borings (for steel works and rolling mill).....	12.00 to 13.00
Cast borings (for chemical plant).....	15.00 to 16.50
No. 1 cast.....	17.00 to 17.50
Heavy breakable cast (for steel works).....	15.50 to 16.00
Railroad grate bars.....	12.25 to 12.00
Stove plate (for steel works).....	12.25 to 12.00
Wrought iron and soft steel pipes and tubes (new specifications).....	13.50 to 14.00
Shafting.....	18.50 to 19.00
Steel axles.....	21.00 to 22.00

Sale of the plant of the Hadfield-Penfield Steel Co., Bucyrus and Willoughby, Ohio, has been ordered by the Federal Court in Cleveland to satisfy a debt to the Government of approximately \$1,500,000 for money advanced during the war. Canceled war-time contracts left the company in debt to the Government and when mortgages on the properties became overdue suit was filed to foreclose. The sale is set for the week of May 2.

## San Francisco

### Southern Pacific Places Large Order for Track Supplies—Steel Pipe Active

SAN FRANCISCO, March 5 (*By Air Mail*).—The Southern Pacific Co., San Francisco, has placed 1900 tons of track spikes, 50 tons of special bolts, 260 tons of rivets, 150 tons of bolts and nuts and 6660 tons of tie plates with unnamed makers. On March 18 it will take bids on 71 passenger coaches. It closed bids March 1 on 10 three-cylinder type locomotives, 1000 gondola cars and 200 oil tank cars. In Los Angeles, an agent for Belgian makers is low bidder on 5280 tons of cast iron pipe. In San Francisco, activity in steel pipe has been a feature of the week. Continued rains have prevented a number of structural projects from going ahead and business in other departments of the market has also been retarded to some extent.

**Pig Iron.**—Little of importance has come up during the week. Prospects are fair for second quarter business. Fresh violence developed during the week in the local molders' strike, and a number of arrests have been made by the police. Fundamentally, however, the situation is virtually the same as it has been for many months past. Quotations on pig iron are unchanged.

	Per Gross Ton
*Utah basic .....	\$25.00 to \$26.00
*Utah foundry, sil. 2.75 to 3.25....	25.00 to 26.00
**Indian foundry, sil. 2.75 to 3.25..	25.00
**German foundry, sil. 2.75 to 3.25.	24.25

\*Delivered San Francisco.

\*\*Duty paid, f.o.b. cars San Francisco.

**Shapes.**—Lettings for the week total 3510 tons. Fresh inquiries call for 700 tons. The largest individual letting, 3000 tons, for the California Club in Los Angeles was taken by the Union Iron Works of Los Angeles. Local fabricators are busy with small jobs, but early in the week outdoor work was hindered by rain. Of particular interest to local structural engineers and fabricators during the week was the placing into position on the Carquinez Bridge, San Pablo Bay, of the first of two 750-ton sections. The section placed is 450 ft. in length. Engineers of the United States Steel Products Co. are in charge of the construction. Eastern mills continue to quote plain material at 2.35c., c.i.f. Coast ports.

**Plates.**—In Portland, Ore., the Union Oil Co. has taken bids on 100 tons for small tank work, and in Los Angeles, 131 tons for a municipal pipe line was awarded to the Los Angeles Mfg. Co. Eastern mills quote plates at 2.30c., c.i.f. Coast ports, but it is understood that 2.25c. is obtainable on desirable tonnages.

**Bars.**—Unfavorable weather conditions have prevented several concrete projects from going ahead, and no fresh inquiries calling for 100-ton lots of reinforcing bars have been reported. Local concrete bar jobbers continue to quote reinforcing steel at 2.85c. per lb., base, on lots of 200 tons, and about 3.10c., base, on less-than-carload lots.

**Cast Iron Pipe.**—The Grinnell Co. of the Pacific, offering Belgian pipe, is low bidder on 5280 tons of 4 and 6-in. Class B pipe for the city of Los Angeles. The American Cast Iron Pipe Co. was awarded 154 tons of 4 and 6-in. Class B pipe by the city of Inglewood, Cal., and by the city of Seattle, Wash., it was awarded 387 tons of 6 and 8-in., Classes C and D, pipe. No fresh

#### Warehouse Prices, f.o.b. San Francisco

	Base per Lb.
Plates and structural shapes.....	3.00c.
Mild steel bars and small angles.....	3.00c.
Small angles, $\frac{1}{4}$ -in. and over.....	3.00c.
Small angles, under $\frac{1}{4}$ -in.....	3.40c.
Small channels and tees, $\frac{1}{4}$ -in. to $2\frac{1}{4}$ -in..	3.60c.
Spring steel, $\frac{1}{4}$ -in. and thicker.....	5.00c.
No. 24 black sheets.....	4.70c.
No. 28 black sheets.....	5.15c.
No. 10 blue annealed sheets.....	3.75c.
No. 24 galvanized sheets.....	5.25c.
No. 28 galvanized sheets.....	6.15c.
Common wire nails, base per keg.....	\$3.75
Cement coated nails, 100-lb. keg.....	3.75

inquiries have been reported. Quotations are weak at \$46 to \$48, base, f.o.b. dock San Francisco.

**Steel Pipe.**—The Pacific Gas & Electric Co., San Francisco, has placed 786 tons of standard pipe in two lots, one of 490 tons and the other of 296 tons, with unnamed firms. The Southern Pacific Co., San Francisco, has awarded 300 tons of standard pipe to an unnamed bidder. The Powell Valley Road Water District, Portland, Ore., has placed 205 tons of 6-in. line pipe with a Portland firm. No fresh inquiries of importance have come into the market.

**Warehouse Business.**—Sales are fair, according to local jobbers, but individual orders are small. Unfavorable weather conditions have prevented the development of fresh inquiries to the extent customary at this time of the year. Quotations are unchanged.

**Coke.**—Local users are fairly well covered on their early second quarter requirements, and current sales are for small lots only. Local importers quote on specific inquiries only.

**Old Material.**—Sales for second quarter requirements have been fairly substantial so far, and additional bookings are likely to be closed during the coming fortnight. Quotations are unchanged.

Prices for scrap delivered to consumers' yards are as follows:

	Per Gross Ton
No. 1 heavy melting steel.....	\$10.50 to \$11.00
Scrap rails, miscellaneous.....	10.50 to 11.00
Rolled steel wheels.....	10.50 to 11.00
Couplers and knuckles.....	10.50 to 11.00
Country mixed scrap.....	7.00 to 8.00
Mixed borings and turnings.....	6.00 to 6.50

## Birmingham

### Pig Iron Melt Increasing Although Buying Is Cautious—Mill Output Large

BIRMINGHAM, March 8.—Small-lot buying is the feature of the pig iron market in the Birmingham district. The smaller industries are only looking two to four weeks ahead, and those buying by the carlot are being called upon to pay a premium of \$1, or \$19, Birmingham, for No. 2 foundry, the base grade. The predominance of hand-to-mouth buying is resulting in a higher average selling price. Furnace interests are slow in opening books for the second quarter, believing that an advance in the market is in sight. Production is unchanged, with 11 blast furnaces on basic, 11 on foundry iron and one on ferromanganese. The output of iron for the first two months of the year showed an increase of more than 5000 tons as compared to the same period a year ago. Production will be maintained at the existing rate, according to present indications. Many of the melters report a slight improvement in trade. The soil pipe and fittings industry is the only important consuming group complaining of lagging demand.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.....	\$18.00
No. 1 foundry, 2.25 to 2.75 sil.....	18.50
Basic .....	18.00
Charcoal, warm blast .....	29.00

**Rolled Steel.**—With few exceptions, open-hearth furnaces in this district are in operation, and every ton of steel produced is being distributed to the finishing mills. New business has been coming in steadily. Quotations on finished products show no change for the week. Rails, railroad accessories, wire and nails are moving in quantity. Local railroads have been buying tie plates and other accessories.

**Cast Iron Pipe.**—Lettings, while not so heavy as a few weeks ago, are still in good volume. Spring buying is almost at hand and is expected to cover a considerable proportion of the probable output for third quarter. Prices are firm at \$36 to \$37 per net ton, Birmingham, for 6-in. and larger diameters. Centrifugal pipe shops are in full operation and have no surplus stock. Pipe shipments are heavy and are expected to be increased, particularly to the Middle West and the Northwest.

**Coke.**—Production is steady, and with few exceptions



all by-product coke ovens of the district are in operation. Independent coke producers are storing no coke. Local consumption shows improvement and coke is still being shipped into other districts. No increase in demand has been felt in this section by reason of the threatened strike in the coal fields of the Central competitive district, which includes the States of Illinois, Indiana, Ohio and a part of Pennsylvania. Coal production in Alabama is still over 400,000 tons a week.

**Old Material.**—Heavy melting steel and No. 1 cast continue to be virtually the only old materials in demand. Heavy purchases of these two grades were noted recently, and deliveries are now being pushed. Dealers have no difficulty in getting all the old material they need. Demand for other grades is lagging.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

Cast iron borings, chemical.....	\$15.50 to \$16.00
Heavy melting steel .....	12.00 to 12.25
Railroad wrought .....	11.00 to 12.00
Steel axles .....	16.00 to 17.00
Iron axles .....	16.00 to 17.00
Steel rails .....	12.50 to 13.00
No. 1 cast .....	15.00 to 16.00
Tramcar wheels .....	15.00 to 16.00
Carwheels .....	14.00 to 15.00
Stove plate .....	13.00 to 14.00
Machine shop turnings .....	8.00 to 8.50
Cast iron borings .....	8.00 to 8.50
Rails for rolling .....	15.00 to 16.00

## St. Louis

### Heavier Sales of Pig Iron—Sheets Steadier—Scrap Still Soft

ST. LOUIS, March 8.—A more favorable feeling is reported in the pig iron market, as evidenced by the sale of about 18,000 tons by the St. Louis Coke & Iron Corporation in a new buying movement. Part of this tonnage was for shipment during March, although the greater portion was for second quarter shipment. Of the iron sold, 10,000 tons was basic iron, 2000 tons malleable, and the remainder foundry iron. The purchasers were Illinois, Kansas, Missouri and Iowa melters. The entire make of the local furnaces was moved during February. Prices are unchanged.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices, \$2.16 freight from Chicago, \$4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25..	\$22.66
Northern malleable, sil. 1.75 to 2.25 .....	22.66
Basic .....	22.66
Southern fdy., sil. 1.75 to 2.25..	\$22.42 to 23.42
Granite City iron, sil. 1.75 to 2.25. 21.81 to	22.31

**Finished Iron and Steel.**—The demand for sheets and plates is improving. Prices are firmer, and the local mill, like some Eastern mills, is not disposed to book business for shipment beyond April, because of the impending coal strike. Warehouse business continues quiet. Business from the oil fields, which had been good, has been curtailed considerably because of weather conditions. Fabricators of structural steel report that business is extremely dull.

**Coke.**—The coke situation is unchanged. The demand for foundry coke is better than the business of

consumers would warrant ordinarily because of the disposition to store fuel against a possible coal strike.

**Old Material.**—All factors in the market are marking time. Dealers who in the previous week sold rails and specialties for melting to an East Side mill are fully covered on their contracts, and there is very little buying of scrap to lay down in yards. Consumers are awaiting orders for finished products before making any moves to buy raw material. Heavy melting steel and shoveling steel declined 25c. a ton, and other declines of 25c. to 50c. a ton are recorded. Railroad lists include: Wabash, 2680 tons; Baltimore & Ohio, 15,360 tons; Chicago & Eastern Illinois, 1000 tons; Mobile & Ohio, 800 tons; St. Louis-San Francisco, 700 tons, and Kansas City Southern, 500 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton	
Iron rails .....	\$14.00 to \$14.50
Rails for rolling .....	14.50 to 15.00
Steel rails less than 3 ft. ....	16.00 to 16.50
Relaying rails, 60 lb. and under..	20.50 to 22.50
Relaying rails, 70 lb. and over..	26.50 to 29.00
Cast iron carwheels .....	14.25 to 14.75
Heavy melting steel .....	12.00 to 12.50
Heavy shoveling steel .....	12.00 to 12.50
Frogs, switches and guards cut apart .....	13.00 to 13.50
Railroad springs .....	14.00 to 14.50
Heavy axle and tire turnings..	9.50 to 10.00
No. 1 locomotive tires .....	16.75 to 17.25

Per Net Ton	
Steel angle bars .....	12.50 to 13.00
Steel car axles .....	17.25 to 17.75
Iron car axles .....	20.50 to 21.00
Wrought iron bars and transoms	17.00 to 17.50
No. 1 railroad wrought .....	10.75 to 11.25
No. 2 railroad wrought .....	10.75 to 11.25
Cast iron borings .....	8.50 to 9.00
No. 1 busheling .....	9.50 to 10.00
No. 1 railroad cast .....	14.25 to 14.75
No. 1 machinery cast .....	16.00 to 16.50
Railroad malleable .....	12.00 to 12.50
Machine shop turnings .....	6.25 to 6.75
Bundled sheets .....	7.50 to 8.00

## Youngstown

### Production Sustained—Extension of Deliveries in Strips

YOUNGSTOWN, March 8.—In this district, production and shipments of rolled steel by the independents continue at an 80 per cent level, with most producers emphasizing that prices are too low. The Carnegie Steel Co. is producing steel ingots at its Ohio Works here at a 95 per cent rate. Prices applying on prevailing shipments on most rolled products are from \$5 to \$7 per ton below prices for the first quarter of 1926. Lower net earnings by district independents are therefore expected for the current period.

The strip steel market is one of the strong spots in the finished steel situation, as indicated by the capacity operation of the Trumbull Steel Co. and the Sharon Steel Hoop Co., leading makers. Unfilled orders have substantially increased, and whereas deliveries were possible a short time ago in two to three weeks, the period has now been extended to three to four weeks. On forward commitments, considerable tonnage is moving at the new prices of 2.10c. to 2.30c., though shipments are being made at the market which prevailed prior to the recent price advance.

In most cases, February shipments by district independents were higher than those for the same month in 1926.

Pressure for deliveries from the automobile trade is responsible for capacity operations by the Newton Steel Co., which is operating all 20 mills at its plant in Newton Falls, Trumbull County. Independent bar mill output is at 60 per cent. Sheet mill schedules show 106 units under power, a decrease of seven mills as compared with the preceding week. The Truscon Steel Co. is active at an 85 per cent rate. Of 53 independent open-hearth furnaces, 42 are melting. The 14-in. strip mill of the Trumbull Steel Co. started Tuesday.

The United Engineering & Foundry Co., Pittsburgh, is installing equipment for the new strip mill of the Trumbull company. This will roll wide material up to 36 in.

### Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and structural shapes .....	3.25c.
Bars, mild steel or iron .....	3.15c.
Cold-finished rounds, shafting and screw stock .....	3.75c.
No. 24 black sheets .....	4.45c.
No. 10 blue annealed sheets .....	3.60c.
No. 24 galvanized sheets .....	5.25c.
Black corrugated sheets .....	4.65c.
Galvanized corrugated sheets .....	5.30c.
Structural rivets .....	3.65c.
Boiler rivets .....	3.85c.
	Per Cent Off List
Tank rivets, $\frac{3}{4}$ -in. and smaller .....	70
Machine bolts .....	50 and 5
Carriage bolts .....	47½
Lag screws .....	55 and 5
Hot-pressed nuts, square, blank or tapped, 3.25c. off per lb.	
Hot-pressed nuts, hexagons, blank or tapped, 3.75c. off per lb.	

## Cincinnati

### Pig Iron Stronger—River Terminal Is Factor in Nail Market

CINCINNATI, March 8.—Pig iron producers in the southern Ohio district are holding to \$19.50 to \$20, base furnace, on foundry grades, one seller in the past week having declined to accept an attractive order at \$19. The fact that Lake Erie furnaces now are asking \$18.50, base furnace, which represents an increase of from 50c. to \$1 a ton, has given encouragement to Iron-ton producers. A fair amount of Northern foundry iron is being booked for second quarter delivery, but most of the tonnage is being sold under cover. Outstanding sales have been 1500 tons of malleable to a Michigan melter, 1000 tons of foundry to a central Ohio consumer and 500 tons of foundry to a southern Ohio company. The Worthington Pump & Machinery Corporation is expected to close for about 1000 tons of foundry for its Elmwood Place, Ohio, plant. Furnaces in the South are offering second quarter iron at \$18, base Birmingham, but sales in this district have been of negligible volume.

Based on freight rates of \$3.69 from Birmingham and \$1.89 from Iron-ton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25	
(base)	\$21.69
Alabama fdy., sil. 2.25 to 2.75	22.19
Tennessee fdy., sil. 1.75 to 2.25	21.69
Southern Ohio silvery, 8 per cent	30.39
So. Ohio fdy., sil. 1.75 to 2.25	\$21.39 to 21.89
So. Ohio malleable	\$20.64 to 21.89

**Finished Material.**—Increased specifications and orders and further stabilization of prices have given a stronger tone to the market. Purchases by consuming industries in general have been fairly good, and jobbers are expected to replenish their slim stocks before the end of the month. With the roofing season about to get under way and with automobile manufacturers calling for a large amount of material, the outlook in sheets is especially promising. In fact, there is a tendency on the part of some mills to refuse to accept tonnage at prices that would have been agreeable several weeks ago. Producers who have been selling galvanized sheets at 3.65c., base Pittsburgh, now are trying to obtain \$2 a ton more, and indications are that 3.75c. will be established as the ruling market price before another week is over. In blue annealed stock, quotations of 2.20c. to 2.25c., base Pittsburgh, are the lowest that buyers can secure. Black sheets are bringing from 2.80c. to 2.90c., base Pittsburgh. An attempt to raise the price of bars \$2 a ton is meeting with resistance on the part of buyers, but several district offices of Eastern steel companies insist that sales have been made in the past few days at 2c., base Pittsburgh. However, 1.90c. is more common. Structural shapes and plates are firm at 1.90c., base Pittsburgh. While the demand for structural steel in this territory has been light, it is expected that a number of important jobs will be brought out within the next few weeks. In the wire market an independent Iron-ton, Ohio, mill is delivering common wire nails to warehouses in this

city at \$2.72 per keg, and several other producers are meeting that price. Now that the Cincinnati river-rail terminal is open for the transfer of material from barges to railroad cars or motor trucks, it is reported that at least one mill in the Pittsburgh district will ship by river to Cincinnati and compete vigorously with the Iron-ton seller.

**Reinforcing Bars.**—The market is sluggish. Awards have been confined to small lots ranging from 25 to 75 tons. Rail steel bars are quoted at 1.80c. to 1.85c., base mill, and new billet stock at 1.90c., base Pittsburgh.

**Warehouse Business.**—A slight betterment in conditions is noted. Sales of structural steel and plates have increased, but wire products are still slow. Prices remain steady and unchanged.

**Coke.**—Increased demand for beehive foundry coke has resulted in one seller in the Wise County district raising prices 50c. a ton on orders for spot shipment. The new schedule calls for \$5.50 to \$6 per net ton, f.o.b. ovens. Specifications for by-product foundry coke have been liberal in volume, automobile manufacturers in the Detroit district having taken substantial tonnages. The by-product domestic market is weak, and buyers are waiting until next month to make purchases in the belief that prices then will be lower.

Based on freight rates of \$2.14 from Ashland, Ky., and \$2.59 from Wise County ovens and New River ovens, we quote f.o.b. Cincinnati: Wise County foundry, \$7.59 to \$8.09; New River foundry, \$10.09 to \$10.59; by-product foundry, \$9.52 to \$9.64.

**Old Material.**—Dealers are marking time, awaiting developments. Some are of the opinion that the market trend will be upward by the middle of April, but others believe that prices will stay at about the present level indefinitely. Steel plants continue to specify at a good rate against current contracts. Foundry grades are quiet, because of the low rate of operations of foundries in this territory.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

Per Gross Ton	
Heavy melting steel	\$12.50 to \$13.00
Scrap rails for melting	12.50 to 13.00
Short rails	17.50 to 18.00
Relaying rails	26.50 to 27.00
Rails for rolling	14.00 to 14.50
Old carwheels	12.00 to 12.50
No. 1 locomotive tires	16.50 to 17.00
Railroad malleable	14.50 to 15.00
Agricultural malleable	13.50 to 14.00
Loose sheet clippings	8.50 to 9.00
Champion bundled sheets	10.50 to 11.00

Per Net Ton	
Cast iron borings	8.00 to 8.50
Machine shop turnings	7.50 to 8.00
No. 1 machinery cast	16.00 to 17.00
No. 1 railroad cast	13.00 to 13.50
Iron axles	19.50 to 20.00
No. 1 railroad wrought	9.00 to 9.50
Pipes and flues	7.50 to 8.00
No. 1 busheling	9.00 to 9.50
Mixed busheling	6.50 to 7.00
Burnt cast	7.00 to 7.50
Stove plate	9.00 to 9.50
Brake shoes	9.50 to 10.00

## Toronto

### Pig Iron Prices Decline—Algoma Company Blows in Furnace

TORONTO, ONT., March 8.—A further decline in pig iron prices featured Canadian markets during the week. In the Toronto market No. 1 foundry and malleable iron dropped 70c. per ton and No. 2 foundry, 30c. per ton, while in the Montreal market there was a decline in No. 1 foundry and malleable of 50c. per ton and No. 2 remained unchanged. With the decline in prices, Canadian producers dropped the 50c. differential between No. 1 and No. 2 foundry in both the Toronto and Montreal districts. Since the first of this year Canadian pig iron prices have declined \$1.70 per ton, which brings them to the lowest level since the close of the war. The prevailing low prices have not stimulated demand. Current sales are almost entirely for spot delivery and range from 50 to 200 tons. Some contracts have been closed for second quarter, but most melters have still to cover for this period. The Algoma Steel Corporation, Sault Ste. Marie, Ont.,

### Warehouse Prices, f.o.b. Cincinnati

	Base per Lb.
Plates and structural shapes	3.40c.
Bars, mild steel or iron	3.30c.
Reinforcing bars	3.30c.
Hoops	4.00c. to 4.25c.
Bands	3.95c.
Cold-finished rounds and hexagons	3.85c.
Squares	4.35c.
Open-hearth spring steel	4.75c. to 5.00c.
No. 24 black sheets	4.05c.
No. 10 blue annealed sheets	3.60c.
No. 24 galvanized sheets	4.90c.
Structural rivets	3.75c.
Small rivets	.65 per cent off list
No. 9 annealed wire, per 100 lb.	\$3.00
Common wire nails, base per keg	2.95
Cement coated nails, base per 100 lb. keg	3.15
Chain, per 100 lb.	7.55
Net per 100 Ft.	
Lap welded steel boiler tubes, 2-in.	\$18.00
4-in.	38.00
Seamless steel boiler tubes, 2-in.	19.00
4-in.	39.00



blew in a second blast furnace on the first of this month. Six blast furnaces are now active in Canada, as follows: British Empire Steel Corp., Sydney, N. S., two; Steel Co. of Canada, Ltd., Hamilton, Ont., two; Algoma Steel Corporation, two. Prevailing pig iron prices in Canada are as follows:

Toronto		Per Gross Ton
No. 1 foundry, sil. 2.25 to 2.75.....		\$24.10
No. 2 foundry, sil. 1.75 to 2.25.....		24.10
Malleable .....		24.10
Montreal		
No. 1 foundry, sil. 2.25 to 2.75.....		26.50
No. 2 foundry, sil. 1.75 to 2.25.....		26.50
Malleable .....		26.50
Basic .....		25.50
Imported Iron at Warehouse		
Montreal		
Summerlee .....		36.00
Carron .....		36.00

**Old Material.**—The demand for old material is practically at a standstill, and sales for the week have been at a minimum. Foundries and other consumers of raw materials appear reluctant to place orders for other than immediate requirements. The general outlook in the steel industry, however, appears bright. Large railroad equipment orders have been placed, and this business is resulting in more activity among the companies sharing in railway orders and the foundries and other concerns who supply castings and parts. Montreal prices showed a slight softening tendency early last week but have since regained the lost ground. Price lists, therefore, remain unchanged. Canadian dealers' buying prices are as follows:

	Toronto	Montreal
Per Gross Ton		
Steel turnings .....	\$8.00	\$8.00
Machine shop turnings.....	7.00	7.50
Wrought pipe .....	6.00	6.00
Rails .....	11.00	10.00
No. 1 wrought .....	11.00	14.00
Heavy melting steel .....	10.50	9.00
Steel axles .....	16.00	17.00
Axles, wrought iron .....	18.00	19.00
Boiler plate .....	8.00	8.00
Heavy axle turnings .....	8.50	8.50
Cast borings .....	8.50	7.50
Per Net Ton		
Standard carwheels .....	14.00	16.00
Malleable scrap .....	14.00	14.00
Stove plate .....	10.00	13.00
No. 1 machinery cast .....	16.00	18.00

## Buffalo

### Donner Stack Blown In—Better Demand for Steel—Scrap Stronger

**BUFFALO, March 8.**—Inquiry for pig iron has not been heavy, although considerable business has been taken in the East. A Bridgeport, Conn., plant has placed 5000 tons of basic. One or two local producers are quoting \$18, base furnace, on Buffalo district business in foundry and state that they are adhering to silicon differentials. Most of the tonnage placed during the week was foundry iron, although some basic was sold at \$17.50. The Donner Steel Co. placed the second of its furnaces in blast on Monday on high silicon foundry. This furnace has been undergoing extensive repairs.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

No. 2 plain fdy., sil. 1.75 to 2.25..	\$17.00 to \$18.00
No. 2X foundry, sil. 2.25 to 2.75..	17.00 to 18.50
No. 1X foundry, sil. 2.75 to 3.25..	18.00 to 19.50
Malleable, sil. up to 2.25.....	17.00 to 18.00
Basic .....	17.00 to 18.00
Lake Superior charcoal .....	27.28

**Finished Iron and Steel.**—Mill operations are increasing under a steadily expanding demand for rolled products, with bars and shapes leading in inquiry. Prices on bars and shapes are 2.265c., Buffalo, for small

#### Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and structural shapes.....	3.40c.
Mild steel bars .....	3.30c.
Cold-finished shapes .....	4.45c.
Rounds .....	3.95c.
No. 24 black sheets .....	4.30c.
No. 10 blue annealed sheets .....	3.80c.
No. 24 galvanized sheets .....	5.15c.
Common wire nails, base per keg.....	\$3.90
Black wire, base per 100 lb.....	3.90

lots. On larger lots, 2.165c. can be done without difficulty. Sheet demand is better, and sheet mill operations have increased. Prices are still variable on most sheets. The fabricated structural field is not featured by any large awards, but there is plenty of small business. Bids are being asked on a municipal waterworks plant at Gowanda, N. Y., requiring 100 tons of reinforcing bars. Many smaller reinforcing bar inquiries are out. Road work requiring reinforcing bars will be awarded March 15.

**Old Material.**—The market continues to improve. One mill has resumed acceptance of shipments on old orders, and this has automatically stiffened prices. In one instance better than \$16 has been paid for heavy melting steel, selected grade, for shipment to this plant. Shipments for another mill are going on steadily. These orders were placed at \$15 to \$15.50, and dealers are paying \$14.50 to \$15 to supply these particular requirements. One dealer purchased two 1000-ton lots at around \$14.50, and states that the market is easy enough on this grade to permit the purchase of 10,000 tons, if necessary, that would meet the specifications of the consumer. Several small orders of low phosphorus have been placed, as well as a number of orders of angle bars and short rails, which in the aggregate, formed a considerable tonnage. There is a scarcity of machine shop turnings and shoveling turnings. Some orders of No. 1 machinery cast scrap have been placed at \$16.75, and one brought \$17.50. A few sales of drop force flashings have been made at \$13 to \$13.50.

We quote prices per gross ton, f.o.b. Buffalo, as follows:

Heavy melting steel .....	\$14.50 to \$15.00
Selected No. 1 heavy melting steel .....	15.50 to 16.00
Low phosphorus .....	17.50 to 18.00
No. 1 railroad wrought.....	13.00 to 13.50
Carwheels .....	16.00 to 16.50
Machine shop turnings .....	9.00 to 9.50
Mixed borings and turnings.....	11.00 to 11.50
Cast iron borings .....	11.50 to 12.00
No. 1 bushelling .....	13.50 to 14.00
Stove plate .....	14.50 to 14.75
Grate bars .....	12.00 to 13.00
Hand bundled sheets .....	10.50 to 11.50
Hydraulic compressed sheets.....	13.50 to 14.00
No. 1 machinery cast.....	16.75 to 17.25
Railroad malleable .....	16.50 to 17.00
Iron axles .....	24.00 to 25.00
Steel axles .....	16.00 to 16.50
Drop forge flashings .....	13.00 to 13.50

## Boston

### Pig Iron Buying Less Active, with Prices Still Unsettled

**BOSTON, March 8.**—Pig iron buying is less active, although eastern New York State furnaces and one Buffalo stack, during the past week, rolled up respectable tonnages in the aggregate. There are still weak spots in the price situation. One Buffalo furnace is soliciting and has accepted business at \$17 a ton, furnace, for No. 2X, which compares with \$17.50 openly quoted. Other furnaces are soliciting orders at \$17.50 but are not always holding to silicon differentials. Eastern Pennsylvania producers, which have been quoting \$21, base, furnace, and have lost business in the Philadelphia district owing to the activity of Buffalo and other New York State furnaces, have cut prices 50c. a ton in New England. The only important open inquiry is one from a Vermont foundry for 500 to 1000 tons of No. 2X for second and third quarter deliveries. It now develops the H. B. Smith Co., Westfield, Mass., bought about 7000 tons of iron, contrasted with 15,000 tons as first reported. The company is still uncovered for part of its second quarter requirements.

We quote delivered prices per gross ton to most New England points as follows, having added \$3.65 freight from eastern Pennsylvania, \$4.91 from Buffalo, \$5.92 from Virginia, and \$6.91 to \$8.77 from Alabama:

East. Penn., sil. 1.75 to 2.25.....	\$24.15 to \$24.65
East. Penn., sil. 2.25 to 2.75.....	24.65 to 25.15
Buffalo, sil. 1.75 to 2.25.....	21.91 to 22.91
Buffalo, sil. 2.25 to 2.75.....	21.91 to 22.91
Virginia, sil. 1.75 to 2.25.....	26.92 to 27.42
Virginia, sil. 2.25 to 2.75.....	27.42 to 27.92
Alabama, sil. 1.75 to 2.25.....	24.91 to 26.77
Alabama, sil. 2.25 to 2.75.....	25.41 to 27.27

**Warehouse Business.**—Because of competition from points outside New England, local warehouses have reduced prices on sheets 15c. per 100 lb. No. 28 one-pass cold-rolled sheets, in 100 bundles or larger lots, are now \$4.45 per 100 lb.; uniform blue steel sheets are 50c. more; No. 28 galvanized sheets are \$5.50. Prices generally quoted on other finished steel products remain as heretofore, but some concessions are being made. The movement of iron and steel out of warehouses has improved slightly in the past fortnight.

**Cast Iron Pipe.**—Woonsocket, R. I., closed bids yesterday on about 400 tons of pipe required for 1927, and Northampton, Mass., took figures on an equal amount of 6 to 12-in. pipe. Most New England towns and cities have made up their 1927 budgets and have approved them with and without changes. Consequently it is anticipated the pipe market will be much more active during the next month. Contrary to earlier reports, concessions, some of them large ones, are offered on large pipe. Prices quoted openly on domestic pipe are: 4-in., \$58.10 a ton, delivered common Boston freight rate points; 6 to 12-in., \$53.10 to \$54.10; larger pipe, \$52.10 to \$53.10. A \$5 differential is asked on Class A and gas pipe.

**Old Material.**—Chemical borings are about 50c. a ton higher, while shafting and street car axles are about that much lower. Otherwise old material prices are virtually the same as last week. Here and there a broker reports slightly more activity, but collective rollings of material out of New England are still light, partly on account of snows tying up haulings and partly because material piles are frozen, but largely because prices offered by consumers are such that brokers cannot find sellers of material or move stock from yards except at a loss. The accumulation of borings and turnings at manufacturing plants is slow because of short-time working schedules.

The following prices are for gross-ton lots, delivered at consuming points:

Textile cast .....	\$18.00 to \$18.50
No. 1 machinery cast .....	17.00 to 17.50
No. 2 machinery cast .....	15.50 to 16.00
Stove plate .....	13.00 to 13.25
Railroad malleable .....	16.50 to 17.00

The following prices are offered per gross-ton lots, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel.....	\$9.50 to \$10.00
No. 1 railroad wrought .....	12.00 to 12.25
No. 1 yard wrought .....	11.00 to 11.25
Wrought pipe (1 in. in diameter, over 2 ft. long) .....	8.50 to 9.00
Machine shop turnings .....	6.00 to 6.50
Cast iron borings, chemical.....	10.50 to 11.00
Cast iron borings, rolling mill.....	7.50 to 8.00
Blast furnace borings and turnings .....	5.75 to 6.00
Forged scrap .....	7.50 to 8.00
Bundled skeleton, long .....	7.60 to 8.00
Forged flashings .....	7.50 to 8.00
Shafting .....	14.50 to 15.00
Street car axles.....	15.00 to 15.50
Rails for rerolling .....	11.00 to 11.50
Scrap rails .....	9.50 to 10.00

**Coke.**—New England by-product foundry coke is still selling at \$12.50 a ton, delivered, within a \$3.10 freight rate zone. Both the New England Coal & Coke Co. and the Providence Gas Co. report fairly free spec-

fications against first half contracts. These specifications are in anticipation of a possible coal strike April 1, and not because of any increase in melt. Sellers insist, however, that there is little real strike apprehension among New England foundries in general. Prices on good Connellsville foundry coke are firmer at \$10.25 to \$11 a ton, delivered in New England. The demand for domestic coke has been more active as a result of colder weather. A New York State oven is reported to have sold domestic coke in Connecticut in the past week at \$10.27 a ton, delivered, which is equivalent to \$7.75 a ton Everett, Mass., as against a quotation of \$9 at that producing point.

## Heavy Shipments of Scrap at Detroit

**DETROIT, March 8.**—The present schedule on pig iron shipments in the district for the month of March appears to be as large as for any month during the past year. Melters are optimistic, and shipments of scrap are on a high basis. Scrap prices are unchanged.

Heavy melting and shoveling steel .....	\$13.00 to \$13.50
Borings and short turnings.....	8.50 to 9.00
Long turnings .....	7.50 to 8.00
No. 1 machinery cast .....	17.00 to 18.00
Automobile cast .....	17.50 to 18.00
Hydraulic compressed .....	11.25 to 11.75
Stove plate .....	13.50 to 14.50
No. 1 busheling .....	11.00 to 11.50
Sheet clippings .....	8.25 to 8.75
Flashings .....	11.25 to 11.75

## Canada and United States to Cooperate in Mineral Research

**TORONTO, ONT., March 8.**—The Canadian and United States Governments are to work in close cooperation in the investigation of problems affecting the mineral industry in the two countries. This understanding was arrived at at a conference at Ottawa, Ont., March 1, attended by Dr. Charles Camsell, Federal Deputy Minister of Mines, Dr. Dorsey Lyon, chief metallurgist and supervisor of experiment stations for the United States Government, and others. The meeting was held under the authority of Hon. Charles Stewart, Minister of the Interior. The chief purpose of the meeting was to come to a common understanding of the problems affecting the mineral industry in both countries, and to discuss ways and means by which information could be pooled and present and future investigations coordinated to the advantage of industry of both countries.

Canada is much interested in the solution of her iron ore problem, it was stated after the meeting. A survey of the iron ore resources of the continent indicates a rapid depletion of the high-grade ore reserves suitable for blast furnace operations. There are in Canada and the United States, however, large reserves of low-grade iron ores which can be used provided economic methods of beneficiation can be devised. Scientific methods of prospecting were also discussed, such as have been used in the location of iron, copper, nickel, and recently the copper-zinc-gold ore bodies of western Quebec. These methods, it is stated, will probably find much larger application in the future.

## Warehouse Prices, f.o.b. Boston

	Base per Lb.
Soft steel bars and small shapes.....	3.265c.
Flats, hot-rolled .....	4.15c.
Reinforcing bars .....	3.265c. to 3.54c.
Iron bars—	
Refined .....	3.265c.
Best refined .....	4.60c.
Norway, rounds .....	6.60c.
Norway, squares and flats .....	7.10c.
Structural shapes—	
Angles and beams .....	3.365c.
Tees .....	3.365c.
Zees .....	3.465c.
Plates .....	3.365c.
Spring steel—	
Open-hearth .....	5.00c. to 10.00c.
Crucible .....	12.00c.
Tire steel .....	4.50c. to 4.75c.
Bands .....	4.015c. to 5.00c.
Hoop steel .....	5.50c. to 6.00c.
Cold rolled steel—	
Rounds and hexagons .....	4.05c.
Squares and flats .....	4.55c.
Toe calk steel .....	6.00c.

## Gridley Machine Co. Is Incorporated

Announcement has been made of the incorporation of the Gridley Machine Co., with George O. Gridley, Miami, Fla., as president. The new company, with headquarters at Hartford, Conn., will build special automatic machinery.

Other officers of the company are: Daniel H. Parker, Windsor, Vt., vice-president and treasurer; and Donald H. Montgomery, Berlin, Conn., secretary. Included on the board of directors are the officers of the company and Earl H. Wheeler, Windsor, Vt.



## FABRICATED STRUCTURAL STEEL

### Awards Low Compared with Recent Weeks, Totaling Less Than 16,000 Tons

Structural steel awards were extremely low in the past week, compared with the totals of recent weeks, but this is not necessarily significant in view of the large amount of work still pending. Inquiries reported total more than 23,000 tons. Awards follow:

BOSTON, 450 tons, substation, Edison Electric Illuminating Co. of Boston to New England Structural Co.  
 MEDFORD, MASS., 175 tons, light manufacturing building, to New England Structural Co.  
 CHARLESTON, MASS., 500 tons, manufacturing building for Schrafft's stores, to Berlin Construction Co.  
 NEW YORK, 1200 tons in the following awards as reported to the Structural Steel Board of Trade, Inc.: apartment building 150 Central Park South, and addition to East Thirty-second Street substation of New York Edison Co., to Levering & Garrigues Co.; six-story office building, 250 Fulton Avenue, Hempstead, L. I., to Hay Foundry & Iron Works.  
 NEW YORK, 1200 tons, loft building, Seventh Avenue and Twenty-ninth Street, to Harris Structural Steel Co.  
 NEW YORK, 180 tons, apartment building, Gleason Avenue and 178th Street, to Alpha Iron Works.  
 NEW YORK, 350 tons, pier No. 35, East River, to American Bridge Co.  
 PHILADELPHIA, 1100 tons, warehouse for Pennsylvania Railroad, to American Bridge Co.  
 BROOKLYN, 1900 tons, coal-handling bridges for Brooklyn Union Gas Co., to Brown Hoisting Machinery Co.  
 NORWOOD, PA., 100 tons, Stanley Theater, to McClintic-Marshall Co.  
 DREXEL HILL, PA., 100 tons, Stanley Theater, to McClintic-Marshall Co.  
 PENNSYLVANIA RAILROAD, 600 tons, catenary bridge on Wilmington branch, to McClintic-Marshall Co.  
 PHILADELPHIA, 400 tons, Stanley Theater, to McClintic-Marshall Co.  
 PHILADELPHIA, 1600 tons, building for Provident Trust Co., to McClintic-Marshall Co.  
 LAKE WORTH, FLA., 400 tons, tower for carillon, to Ingalls Iron Works.  
 CENTRAL RAILROAD OF GEORGIA, 700 tons, bridges, to an unnamed fabricator.  
 SOUTHERN RAILWAY, 600 tons, bridges, to Mount Vernon Bridge Co.  
 ROME, N. Y., 1700 tons, mill building for Rome Brass & Copper Co., to McClintic-Marshall Co.  
 BUFFALO, 1550 tons, National Biscuit Co., bakery addition, to American Bridge Co.  
 CLARKSBURG, W. VA., 100 tons, theater, to Gilbert Steel Co.  
 YOUNGSTOWN, 125 tons, Youngstown Sheet & Tube Co. building, to Pittsburgh Bridge & Iron Co.  
 TRENTON, MICH., 475 tons, Detroit-Edison Co. power house addition, to American Bridge Co.  
 EVANSTON, ILL., 100 tons, St. George High School, to Hansell-Elcock Co., Chicago.  
 STICKNEY, ILL., 100 tons, building for the Sanitary District Trustees, to Hansell-Elcock Co.  
 ROCKFORD, ILL., 600 tons, office building, to an unnamed bidder.  
 CODY, ARK., 700 tons, bridge over St. Francis River, to Vincennes Bridge Co.  
 LOS ANGELES, 131 tons, riveted pipe line for the city of Los Angeles, to Los Angeles Mfg. Co.  
 SAN DIEGO, CAL., 160 tons, telephone building, to Pacific Rolling Mill Co., San Francisco.

### Structural Projects Pending

Inquiries for fabricated steel work include the following:

NORTH ATTLEBORO, MASS., 100 tons, Masonic Temple.  
 BOSTON, 800 tons, addition to John Hancock Insurance Building.  
 BOSTON & MAINE RAILROAD, 300 tons, warehouse at Charlestown, Mass.  
 NEW YORK, 500 tons, loft building on West Forty-sixth Street.  
 NEW YORK, 500 tons, building for Y. W. C. A. on East Seventy-seventh Street.  
 BROOKLYN, 500 tons, public school No. 115.  
 KEARNY, N. J., 500 tons, building for Western Electric Co.  
 PHILADELPHIA, 1000 tons, addition to the Bonwit-Teller retail store.  
 PENNSYLVANIA RAILROAD, 300 tons, building in Sunnyside yards, Long Island City, N. Y.

PENNSYLVANIA RAILROAD, 500 tons, five bridges in different sections.

KINGSTON, PA., 700 tons, high school building.  
 NORTHUMBERLAND, PA., 800 tons, State highway bridge.  
 NORFOLK & SOUTHERN RAILROAD, 200 tons, bridges.  
 VIRGINIAN RAILWAY, 200 tons, two bridges.

MOBILE, ALA., 750 tons, transit shed at Pier 1 for the Alabama State Dock Commission.

INDIANAPOLIS, 900 tons, Scottish Rite Cathedral.

CHICAGO, 500 tons, Amalgamated Clothiers' Union Building.

CHICAGO & NORTH WESTERN RAILROAD, 4000 tons, bridges.

ALTON, ILL., 2900 tons, bridge over Mississippi River.

RACINE, WIS., 500 tons, Main Street bridge over Root River;

Edward E. Gillen Co., Milwaukee, low bidder at \$305,227.

BELLEFONTAINE, MO., 2300 tons, bridge over Missouri River.

PORTLAND, ORE., 100 tons, tanks for the Union Oil Co.; bids in.

ALAMEDA, CAL., 100 tons, warehouse for the Alaska Packers; bids March 7.

OAKLAND, CAL., 100 tons, building for the Pacific Gas & Electric Co., in the Fruitvale district; bids to be called soon.

SAN FRANCISCO, 400 tons, St. Elizabeth's Hospital; bids March 7.

SAN FRANCISCO, 100 tons, addition to roof of Fairmont Hotel.

NORTHERN PACIFIC RAILROAD, 800 tons, bridges.

CLEVELAND, 2500 tons, additions to public auditorium.

WILKES-BARRE, PA., 400 tons, car repair shops for the Wilkes-Barre Railroad Co.

## RAILROAD EQUIPMENT

### A Total of 1475 Freight Cars Ordered—Western Road Buys 20 Locomotives

Several orders for freight cars make a total of 1475 units bought within the past week. The Chicago & North Western contracted for 20 locomotives and the Texas & Pacific inquired for 20. Details of the week's business follow:

The Chicago & North Western has ordered 20 locomotives from the American Locomotive Co., 12 of the 2-8-4 type and 8 of the 0-8-0 type.

The Texas & Pacific is asking for prices on 15 Texas type and 5 8-wheel switching locomotives.

The Minneapolis, St. Paul & Sault Ste. Marie is in the market for 84 caboose car underframes.

The Texas Co. has ordered 600 tank cars, 400 from the Pennsylvania Tank Car Co. and 200 from the American Car & Foundry Co.

The Oliver Iron & Mining Co. has bought 35 air-dump cars from the Magor Car Corporation and 20 from the Differential Car Co.

The Atchison, Topeka & Santa Fe has ordered 50 ballast cars each from the Pressed Steel Car Co. and Rodger Ballast Car Co.

The Great Northern will build 500 50-ton box cars in its own shops and is inquiring of car builders for steel underframes for them.

The Baltimore & Ohio has ordered 50 steel coaches from the Pullman Car & Mfg. Corporation, 15 passenger-baggage cars and 15 baggage cars from the Standard Steel Car Co. and 15 baggage-mail cars from the American Car & Foundry Co.

The Chesapeake & Ohio has awarded orders for 250 70-ton hopper car bodies to the Richmond Car Works and 250 to the American Car & Foundry Co.

The Canadian National Railways have inquired for 20 steel underframes for caboose cars.

The New York Rapid Transit Co. is in the market for 150 triplex subway units consisting of 150 bodies and 200 trucks.

The Pere Marquette is inquiring for 20 air-dump cars.

The Buckeye Coal Co. is inquiring for 400 mine cars.

The New River & Pocahontas Consolidated Coal Co. is inquiring for 200 mine cars.

The Denver & Rio Grande Western is in the market for 30 automobile cars.

The H. C. Frick Coke Co. has issued a new inquiry for 200 mine cars, and is considering the purchase of 1284 mine cars on which quotations have been made.

The Chicago, Burlington & Quincy has placed 36 suburban cars with the Bettendorf Co.

The Great Northern has contracted with the Siemens-Stemle Co. for repairs to 50 flat cars.

The Canadian National Railways have awarded 700 box cars to the National Steel Car Co.

## NON-FERROUS METAL MARKETS

The Week's Prices		Mar. 8	Mar. 7	Mar. 5	Mar. 4	Mar. 3	Mar. 2
Cents per Pound for Early Delivery	Lake copper, New York....	13.50	13.50	13.50	13.50	13.50	13.50
	Electrolytic copper, N. Y.*..	13.12½	13.12½	13.12½	13.12½	13.12½	13.12½
	Straits tin, spot, New York.	70.00	69.87½	70.00	70.37½	70.25	69.50
	Lead, New York.....	7.65	7.65	7.65	7.65	7.65	7.55
	Lead, St. Louis.....	7.35	7.35	7.35	7.35	7.35	7.30
	Zinc, New York.....	7.12½	7.15	7.17½	7.17½	7.17½	7.15
	Zinc, St. Louis.....	6.77½	6.80	6.80	6.82½	6.82½	6.80

\*Refinery quotation; delivered price ¼c. higher.

NEW YORK, March 8.—General conditions in the market have changed but little and activity continues only moderate in most metals. In copper, prices, while fairly firm, have shown a tendency toward lower levels. The tin market continues to hover around the 70c. level and buying has been fairly large. There were two advances in lead prices during the week with demand fairly well sustained. Scarcely any change has taken place in the zinc market, either as to prices or demand.

**Copper.**—For the greater part of another week foreign buying has been the mainstay of the market and has kept domestic prices fairly steady. Today, however, with a slackening of interest on the part of consumers abroad, the domestic electrolytic copper market has turned a little softer and quotations are quite general at 13.37½c., delivered in the Connecticut Valley, by all producers. Previous to today and for the most part of the week there was an attempt to maintain quotations at 13.50c., delivered, but each day there was metal available from at least one seller at 13.37½c. On each day some business was done at both prices. Copper Exporters, Inc., have not changed their price since a week ago and it still stands at 13.65c. c.i.f. Hamburg. Among foreign buyers may be mentioned not only England, Germany, France and Italy during the past week or two, but also Japan and Russia. It is of interest to note that Russia's purchases of copper, as well as of lead and zinc, are reported to have been heavy, copper sales alone in one

week being estimated as high as 6000 tons. Domestic consumers continue to show but little interest, but are watching the market closely. Lake copper is quoted at 13.50c., delivered.

**Tin.**—Sales for the past week, including today, have been about 1800 tons. The business has consisted principally of a swapping of positions among dealers, consumers taking less than half the total. The market in general is characterized as full of cross currents and of a manipulative character. Late last week it looked as though efforts were being made to corner March metal in New York and spot metal in London, but lower prices in both markets this week indicate that this may have been abandoned temporarily at least. In London today spot standard is quoted at £313, future standard at £299 10s. and spot Straits at £326. The Singapore price was £308 15s. The quotation here today was 70c., New York, for spot Straits metal. Arrivals thus far this month have been 795 tons with 6880 tons reported afloat.

**Lead.**—The American Smelting & Refining Co. advanced its New York contract price on two successive days, March 2 and 3, from 7.40c. to 7.55c. and then to 7.65c., New York, where it still stands. In the outside market a little metal has been sold on the basis of 7.70c., New York, with the quotation at St. Louis at 7.35c. Demand has been good. The London market is heavy and one authority believes that there is too much lead available over there.

**Zinc.**—Prices have been quite steady all the week with prime Western zinc quoted at 6.77½c., St. Louis, or 7.12½c., New York, today. Demand from consumers has been fairly good for prompt and early shipment and galvanizing operations have been on the increase. The market today is quiet and producers still maintain the attitude of not pressing the market. Ore prices continue unchanged at \$45 per ton at Joplin, Mo.

### Metals from New York Warehouse

*Delivered Prices per Lb.*

Tin, Straits pig .....	72.50c. to 73.50c.
Tin, bar .....	74.50c. to 75.50c.
Copper, Lake .....	14.62½c.
Copper, electrolytic .....	14.37½c.
Copper, casting .....	13.87½c.
Zinc, slab .....	7.75c. to 8.25c.
Lead, American pig .....	8.50c. to 9.00c.
Lead, bar .....	11.00c. to 11.50c.
Antimony, Asiatic .....	15.00c. to 16.00c.
Aluminum No. 1 ingot for remelting (guaranteed over 99 per cent pure) ..	29.00c. to 30.00c.
Babbitt metal, commercial grade ..	30.00c. to 40.00c.
Solder, ½ and ¼ .....	43.00c. to 44.00c.

### Metals from Cleveland Warehouse

*Delivered Prices per Lb.*

Tin, Straits pig .....	77.50c.
Tin, bar .....	79.50c.
Copper, Lake .....	14.00c.
Copper, electrolytic .....	14.00c.
Copper, casting .....	13.25c.
Zinc, slab .....	8.25c.
Lead, American pig .....	8.50c.
Antimony, Asiatic .....	19.50c.
Lead, bar .....	10.25c.
Babbitt metal, medium grade .....	23.75c.
Babbitt metal, high grade .....	79.75c.
Solder, ½ and ¼ .....	45.00c.

### Rolled Metals from New York or Cleveland Warehouse

*Delivered Prices, Base per Lb.*

<b>Sheets—</b>	
High brass .....	18.37½c. to 19.12½c.
Copper, hot rolled .....	22.00c. to 23.00c.
Copper, cold rolled, 14 oz. and heavier ..	24.25c. to 25.25c.
<b>Seamless Tubes—</b>	
Brass .....	23.25c. to 24.25c.
Copper .....	24.00c. to 25.00c.
Braced Brass Tubes .....	26.12½c. to 27.12½c.
Brass Rods .....	15.87½c. to 16.87½c.

#### From New York Warehouse

*Delivered Prices, Base per Lb.*

Zinc sheets (No. 9), casks .....	12.75c. to 13.00c.
Zinc sheets, open .....	13.25c. to 13.50c.

## Non-Ferrous Rolled Products

Lead full sheets were advanced ¼c. on March 3 and are now quoted at 11.25c. to 11.50c. per lb. Bronze brass and copper products are still holding to the advance of Feb. 28, and zinc sheets have not changed since Jan. 10.

### List Prices per Lb., f.o.b. Mill

*On Copper and Brass Products, Freight up to 75c. per 100 Lb. Allowed on Shipments of 500 Lb. or Over*

<b>Sheets—</b>	
High brass .....	18.37½c.
Copper, hot rolled .....	22.00c.
Zinc .....	11.00c.
Lead (full sheets) .....	11.25c. to 11.50c.
<b>Seamless Tubes—</b>	
High brass .....	23.25c.
Copper .....	24.00c.
<b>Rods—</b>	
High brass .....	16.12½c.
Naval brass .....	18.87½c.
<b>Wire—</b>	
Copper .....	15.37½c.
High brass .....	18.87½c.
Copper in Rolls .....	20.87½c.
Braced Brass Tubing .....	26.37½c.

#### Aluminum Products in Ton Lots

The carload freight rate is allowed to destinations east of the Mississippi River and also allowed to St. Louis on shipments to destinations west of that river.

Sheets, 6 to 10 gage, 3 to 30 in. wide ..	35.50c.
Tubes, base .....	45.00c.
Machine rods .....	34.00c.



## Rolled Metals, f.o.b. Chicago Warehouse

(Prices Cover Trucking to Customers' Doors in City Limits)

Sheets—	Base per Lb.
High brass .....	18.37½c.
Copper, hot rolled .....	22.00c.
Copper, cold rolled, 14 oz. and heavier .....	24.25c.
Zinc .....	12.00c.
Lead, wide .....	10.25c.
Seamless Tubes—	
Brass .....	23.25c.
Copper .....	24.00c.
Brazed Brass Tubes .....	26.37½c.
Brass Rods .....	16.12½c.

Russia is said to have bought about 2500 tons of zinc in this market in the last 10 days.

**Antimony.**—Due largely to the belief that stocks are accumulating in China, the market has a downward trend and prices are easier. Chinese metal for spot delivery is quoted today at 13c., New York, duty paid, with futures at 12.25c. to 12.50c.

**Nickel.**—Prices are unchanged with ingot nickel in wholesale lots quoted at 35c., shot nickel at 36c. and electrolytic nickel at 39c. per lb.

**Aluminum.**—Virgin metal, 98 to 99 per cent pure, is quoted at 26c. per lb., delivered.

## Non-Ferrous Metals at Chicago

MARCH 8.—Inquiry for non-ferrous metals is good and sales are in fair volume. The price of tin, though not advanced, is strong. Prices of old metals are steady but orders are dragging.

We quote in carload lots: Lake copper, 13.75c.; tin, 72.50c.; lead, 7.45c.; zinc, 6.95c.; in less than carload lots, antimony, 15c. On old metals we quote copper wire, crucible shapes and copper clips, 10.25c.; copper bottoms, 9c.; red brass, 9c.; yellow brass, 7.25c.; lead pipe, 6.25c.; zinc, 4.25c.; pewter, No. 1, 35c.; tin foil, 43.50c.; block tin, 52c.; aluminum, 15c.; all being dealers' prices for less than carload lots.

## REINFORCING STEEL

## Awards Show a Gain with Total of 7600 Tons in a Week—Inquiries 3100 Tons

Concrete reinforcing bar awards are showing a slight seasonal gain, the total for the past week, as reported to THE IRON AGE, being about 7600 tons, including 3000 tons for a mail order warehouse at Memphis, Tenn. Inquiries reported total about 3100 tons. Awards follow:

NEW YORK, 500 tons, Luce Building and service station, West Fifty-seventh Street, to Kalman Steel Co.  
 LONG ISLAND CITY, N. Y., 100 tons, building for Charmount Realty Corporation and Excelsior Quilting Co., to Concrete Steel Co.  
 JAMAICA, N. Y., 135 tons, Y. M. C. A. building, to Ferro Building Products Co.  
 MEMPHIS, TENN., 3000 tons, warehouse for Sears, Roebuck & Co., to Sheffield Steel Corporation, Kansas City.  
 CHICAGO, 450 tons of rail steel, superstructure for the Chatelaine Tower Apartments, to Calumet Steel Co.  
 CHICAGO, 200 tons of rail steel, St. Ann's Hospital, to Inland Steel Co.  
 CHICAGO, 125 tons, apartment building at Sixty-ninth and Jeffery Streets, to Olney J. Dean & Co.  
 LAKE FOREST AND NORTH CHICAGO, ILL., 100 tons, filter plant, to Truscon Steel Co.  
 STATE OF IOWA, 200 tons, road work, to Olney J. Dean & Co.  
 WAUSAU, WIS., 120 tons, commercial building, to Concrete Steel Co.  
 MADISON, WIS., 120 tons, Maas Brothers and DeForest Lumber Co. building, to Concrete Steel Co.  
 PORTLAND, ORE., 150 tons, Bull Run storage dam, to an unnamed firm.  
 LOS ANGELES, 565 tons, Sutherland dam, to unnamed bidders.  
 SAN FRANCISCO, 200 tons, garage on Latham Street, to Gunn, Carle & Co., San Francisco.

## Old Metals, Per Pound, New York

The buying prices represent what large dealers are paying for miscellaneous lots from the smaller accumulators, and the selling prices are those charged consumers after the metal has been properly prepared for their uses.

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, heavy crucible .....	11.25c.	12.75c.
Copper, heavy and wire .....	11.00c.	12.00c.
Copper, light and bottoms .....	9.25c.	11.00c.
Brass, heavy .....	7.00c.	8.50c.
Brass, light .....	6.00c.	7.50c.
Heavy machine composition .....	5.50c.	10.00c.
No. 1 yellow brass turnings .....	7.75c.	8.25c.
No. 1 red brass or composition turnings .....	8.00c.	9.00c.
Lead, heavy .....	6.50c.	7.00c.
Lead, tea .....	4.50c.	5.25c.
Zinc .....	4.00c.	4.50c.
Sheet aluminum .....	15.00c.	17.00c.
Cast aluminum .....	15.00c.	17.00c.

YOUNGSTOWN, 700 tons, warehouse for Erie Railroad, to Truscon Steel Co.

PHILADELPHIA, 400 tons, building for the Freihofer Baking Co., to McClintic-Marshall Co.

CHICAGO, 400 tons of rail steel, Royal Blue Store building, to Barton Spiderweb System.

CHICAGO, 110 tons of rail steel, Klein furniture store, to Joseph T. Ryerson & Son.

## Reinforcing Bars Pending

Inquiries for reinforcing steel bars include the following:

NEW YORK, 750 tons, loft building, Varick and Vandam Streets; Victor Mayper, architect.  
 CHICAGO, tonnage being estimated, hotel at 429 Roscoe Street; Rissman & Herschfeld, architects.  
 CHICAGO, tonnage being estimated, cooperative garage at 1324 North Clark Street; Revore, Wentworth, Dewey & McCormick, architects.  
 CHICAGO, tonnage being estimated, apartment building at 609 Stratford Place; K. M. Vitahum, architect.  
 CHICAGO, 125 tons, apartment building at 5220 Kenmore Avenue; Roy Franze, architect.  
 CHICAGO, 100 tons, Blackstone Hall; Schmidt, Garden & Erickson, architects.  
 CHICAGO, 125 tons, apartment building on South Shore Drive; S. Minchen, architect.  
 CHICAGO, 500 tons, apartment building at 210 East Pearson Street; Husagh & Hill, architects.  
 CHICAGO, 175 tons, apartment building at Winthrop and Bryn Mawr Avenues; Dubin & Eisenberger, architects.  
 CHICAGO, 175 tons, apartment building at 431 Oakdale Avenue; Quinn & Christensen, architects.  
 CHICAGO, 200 tons, apartment building at 5040 Kenmore Avenue; David Sol Krafter, architect.  
 CHICAGO, tonnage being estimated, apartment building at Kenmore and Bryn Mawr Avenues; Ledy & Klein, architects.  
 CHICAGO, 100 tons, Knights of Pythias Temple, Thirty-seventh and State Streets.  
 CHICAGO, 215 tons, club building at Ashland and Van Buren Streets; W. W. Alschlager, architect.  
 EVANSTON, ILL., tonnage being estimated, Homestead Apartments; P. A. Danielsten, architect.  
 CAMDEN, N. J., 190 tons, warehouse for Security Storage Co.  
 BIRDSBORO, PA., 320 tons, bridge.  
 PHILADELPHIA, 118 tons, Shallock School.

Mention has been made in these columns of the new 10,000-ton steamship, the B. F. Affleck, now being built for the Pittsburgh Steamship Co. It is named for Benjamin F. Affleck, Chicago, president Universal Portland Cement Co., a United States Steel Corporation subsidiary. This enlargement of lake-carrying service is in line with other recent activities of the cement company, which is just completing a \$3,000,000 expansion program at its Buffington, Ind., plant, including construction of a new harbor, dock, storage yard and lighthouse. This development will make possible shipments by boat of finished cement to all lake ports as well as receipt of raw material from quarries.

## PERSONAL

George W. Llewellyn, who, as announced in THE IRON AGE last week, has been appointed district sales



G. W. LLEWELLYN

manager in Detroit and the State of Michigan for the Seneca Iron & Steel Co., Buffalo, was recently Detroit district manager for the Thomas Sheet Steel Co., Niles, Ohio. He has spent a considerable part of his business life in the Detroit territory and previous to his association with the Thomas company acted as a manufacturers' agent for sheets and other products required in the automobile industry.

William R. Crane, for many years in the sales department of the American Rolling Mill Co., Middletown, Ohio, is president of the newly incorporated

United Welding Co., Middletown, which has been organized to do general contract welding and act as a welding engineer. W. W. Petry, for some time in charge of welding activity at the Rolling Mill company's plant, is vice-president and general manager of the new company. He has been active in welding association work, and recently has served as a consulting engineer on welding. C. W. Shartle, Jr., secretary and treasurer of the new organization, was formerly associated with the Shartle Brothers Machine Shop at Middletown.

Howard E. Oberg, associated for 15 years with the forging industry, most recently with the Billings & Spencer Co., Hartford, Conn., has been placed in charge of sales engineering in the Middle West for that company. His headquarters will be at 5-251 General Motors Building, Detroit.

Frederick G. Bell, formerly president and general manager Zobell Electric Motor Corporation, Garwood, N. J., has been engaged by the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., to develop a closer coordination of its motor supply and its electric crane and hoist business.

Joseph G. Worker, for five years assistant to the president American Engineering Co., Philadelphia, has been made general sales manager of the company and also elected to its board of directors. Following his graduation in mechanical engineering from the University of Illinois he was associated for 15 years with the Westinghouse Electric & Mfg. Co., having been manager of the company's stoker section at East Pittsburgh during the last five years of that period. He is a member of the American Society of Mechanical Engineers, a former president of the Stoker Manufacturers' Association, and has written a number of articles on combustion engineering and mechanical stokers.

Edward A. Moss, for several years engaged in the steel contracting business at Cleveland, has been made vice-president of the J. E. Moss Iron Works, Wheeling, W. Va. He was associated with the company several years ago, but left at the time of the recent war to enter government work.

Fenton H. Finn, Ridgway, Pa., a junior in the department of mining and metallurgical engineering at the Carnegie Institute of Technology, Pittsburgh, has

been awarded the national scholarship of \$500, offered annually by the American Institute of Mining and Metallurgical Engineers. The scholarship is effective during the current college year. He is the first Carnegie student to win this honor, for which all students of mining, metallurgy or geology throughout the country are eligible to compete. Funds for the scholarship are provided by the women's auxiliary to the institute.

O. J. Neslage, for several years associated with the St. Louis sales organization of the Sullivan Machinery Co., Chicago, more recently in the Joplin, Mo., lead and zinc district, has been appointed local manager for the company at Mexico City, Mexico. He succeeds A. W. Oakes, who will return to the United States. C. W. Miller has been appointed special representative for the Sullivan company in Cuba and will cooperate with the Purdy & Henderson Trading Co., Havana, the Sullivan general agent in Cuba. Matt Brodie, manager in Asia for the company, has returned to his duties, following a three months' visit in the United States.

Frank J. Donnelly has joined the New York sales organization of the Botfield Refractories Co., Philadelphia, and will represent the company in northern New Jersey.

Edgar C. Thomas has been appointed Pittsburgh representative Thomas Spacing Machine Co., succeeding C. J. Brown, resigned.

Arthur Simonson, since 1916 sales manager, steel foundry department, Falk Corporation, Milwaukee, has been made a vice-president of the company. Following graduation from the Sheffield Technical School, Sheffield, England, he worked for a time in the steel foundry department of Edgar Allen & Co., Ltd., Sheffield. After coming to the United States he was for some years general foundry superintendent for William Wharton, Jr. & Co., Inc., Philadelphia, and has been associated with the Falk Corporation since 1910.

B. M. Slicing has been made sales promotion manager of the Trico Fuse Mfg. Co., Milwaukee, with headquarters at the company's home office. J. E. Eldredge has been appointed representative for the Trico organization in Connecticut and western Massachusetts, and Arthur E. Bacon has received a similar appointment with territory in Colorado, New Mexico, Utah and Wyoming.

C. R. Messinger has been elected president of the Interstate Drop Forge Co., Milwaukee. C. E. Stone is vice-president and general manager; C. C. Bremer, treasurer, and J. C. Merker, secretary. Mr. Messinger is also president of the Chain Belt Co., Milwaukee, with which the Interstate company is affiliated.

Daniel W. Williams, purchasing agent and office manager R. Wallace & Sons Mfg. Co., Wallingford, Conn., has been made a director of the company to succeed the late Robert Morris, formerly manager of the Chicago office.

William Monroe White, manager of the steam turbine department, Allis-Chalmers Mfg. Co., Milwaukee, sailed Feb. 26 for Japan, where he will remain several months.

C. V. Lally has resigned as manager Detroit office, National Tube Co., to become general manager of sales Pittsburgh Steel Products Co., Pittsburgh. Mr. Lally has been with the National Tube Co. in a sales capacity for 17 years, almost half of that period in charge of the Detroit office. A. P. Happer, who has been Mr. Lally's assistant for several years, has been named his successor.

C. J. Sturgeon, who has been identified with various sales organizations of the machine tool industry in Cleveland for several years, has become associated with D. C. Oviatt & Co., Cleveland, dealers in used machinery.



Richard R. Harris, general manager of sales Pittsburgh Steel Co. and subsidiaries, has resigned and retired from active business. He became identified with the steel industry in 1896, and since that time has been active in the sale of seamless tubing and pipe. Starting with the New Castle Tube Co., New Castle, Pa., manufacturer of bicycle tubing, he continued with the Shelby Tube Co. when it acquired the New Castle company in 1898, and was retained by the National Tube Co. when it took over the Shelby company in 1901. In December, 1906, Mr. Harris left the National Tube Co. to become manager of sales Seamless Tube Co. of America, as the Pittsburgh Steel Products Co. then was known, and held this position until May 24, 1926, when he was promoted to the position he has just relinquished.

Samuel H. Day, manager of the Philadelphia district office of the Department of Commerce, has been appointed trade commissioner in charge of the department's office at Johannesburg, South Africa, and will take up his new duties soon after June 1. He succeeds P. J. Stevenson, who will return to the Washington bureau for a time before taking another field position. Mr. Day's successor in Philadelphia has not been named.

John Drewson, until recently superintendent Hazelwood by-product coke plant, Jones & Laughlin Steel Corporation, Pittsburgh, has become identified with the Koppers Co., Pittsburgh. Before going with the Jones & Laughlin organization in 1919 he was with the Corrigan-McKinney Steel Co., Cleveland, and prior to that, with the Woodward Iron Co., Woodward, Ala.

Ben Friedman of the Metals Refining Co., Chicago, was elected chairman of the Western division of the National Association of Waste Material Dealers at a meeting of the Chicago association on March 1 at Hotel LaSalle, Chicago.

Wesley L. Kendall has been made president and treasurer of the Baldwin Chain & Mfg. Co., Worcester, Mass., and will fill the place in the active management made vacant by the death of William H. Gates. William F. Cole continues as vice-president. Besides Messrs. Kendall and Cole, the board of directors consists of George T. Dewey, William H. Gates, Jr., and Henry P. Blumenauer, head of the Arcade Malleable Iron Co.

Charles W. Henderson, Jr., vice-president and secretary A. C. Harvey Co., Boston, iron and steel merchant, and for the past two years acting treasurer of the company, has severed his connection with the firm.

L. Kemper has resigned as treasurer Otis Steel Co. and as vice-president and treasurer Midland Steel Products Co., Cleveland. Gordon Stoner, secretary of the Midland company and manager of its Detroit plant, succeeds him as vice-president of the Midland organization but will remain at the Detroit plant. H. F. Kulas succeeds Mr. Stoner as secretary of the Midland company and S. C. Conrad succeeds Mr. Kemper as its treasurer. At the Otis plant G. A. Paine, assistant treasurer, will assume the treasurer's duties.

Dr. Alfred Eisenstein, of Vienna, Austria, and H. B. Jespersen, of Copenhagen, Denmark, European correspondents and consultants of Arthur D. Little, Inc., Cambridge, Mass., are spending a few weeks in this country at the corporation's home offices.

Tell Berna, for the past seven years sales manager of the G. A. Gray Co., Cincinnati, manufacturer of planers, has resigned to accept a similar position with the Union Twist Drill Co., Athol, Mass. Previous to his connection with the Gray company he was associated with the Cutler Hammer Co. He is a graduate of Cornell University and in recent years has been actively identified with many civic enterprises in Cincinnati. To succeed Mr. Berna the G. A. Gray Co. has appointed John E. Doran, who is a graduate of the Engineering College of the University of Cincinnati

and who has been connected with the Union Gas & Electric Co. in Cincinnati for a number of years. More recently Mr. Doran has conducted his own business as a consulting engineer. He is a past president of the Cincinnati Engineers Club.

Walter Candlin, formerly with the Homb branch of the Crucible Steel Co. of America, has been appointed Philadelphia district sales manager for the Braeburn Alloy Steel Corporation, Braeburn, Pa., and will have his office at 1201 Pennsylvania Building.

## OBITUARY

CHARLES J. HUNTER, secretary Wheeling Steel Corporation, Wheeling, W. Va., died at his home in Bridgeport, Ohio, March 6. He was born at Wheeling in 1871 and had been identified with the Wheeling corporation and its subsidiaries since he was a young man. Serving as purchasing agent of the Wheeling Steel & Iron Co. for 13 years he later was made secretary and treasurer, and became vice-president of that company in 1920 when it was merged with the Whitaker-Glessner Co. and La Belle Iron Works to form the Wheeling Steel Corporation. Later he succeeded John Duncan as president of the company. In 1923, when the Wheeling Steel Corporation became an operating instead of a holding company, Mr. Hunter was elected secretary of the corporation.

W. W. COOKE, president Adrian Wire Fence Co., Adrian, Mich., and a well known figure in the wire fence business, died at Adrian March 1.

HERBERT CHAMPION HARRISON, president Harrison Radiator Co., Lockport, N. Y., died March 6 at London, England, aged 50 years. He was born at Calcutta, India, and following graduation from Trinity College, Oxford, England, he worked for a time as metallurgist in a London experimental laboratory. Coming to this country in 1907, he became associated with the Susquehanna Smelting Co. of Pennsylvania, but later organized the radiator company of which he was president and general manager. He continued in this position when the company was absorbed by the General Motors Corporation a few years ago.

ENGELBERT FISCHER, founder of the Fischer Machine Works, Chicago, died Feb. 15, aged 79. He had retired from active business seven years ago.

DR. ALFRED W. SMITH, professor of chemical engineering, Case School of Applied Science, Cleveland, died of heart disease March 4, aged 61 years. He was graduated from the University of Michigan in 1885 and from the Case school in 1887. After securing a doctor's degree from the University of Zurich he became a member of the Case faculty as an assistant in chemistry. In 1891 he became assistant professor of metallurgy in chemistry and in 1906 was made professor of metallurgy. He had been professor of chemical engineering since 1912. He was the technical adviser to the Dow Chemical Co. and during the war devised the equipment that put the production of mustard gas on a quantity basis. He was a member of a number of technical societies.

CHARLES C. STUTZ, since 1920 secretary of the American Institute of Weights and Measures, died recently at his home in New York. He was born at Naples, Italy, in 1861, and was educated at the Polytechnic School of Switzerland. In 1888 he entered the employ of the Brown & Sharpe Mfg. Co., Providence, R. I., and soon became assistant chief draftsman. After some years in Europe he again returned to America and was associated in an engineering capacity with the Sprague Electric Co. and later with the Pittsburgh Plate Glass Co. He was a member of the American Society of Mechanical Engineers and of the American Institute of Electrical Engineers.

# Machinery Markets and News of the Works

## ANOTHER RAILROAD LIST

### St. Louis-San Francisco Issues Inquiry for Shop Equipment

#### Machine Tool Buying Is Showing Only Slight Improvement

THE St. Louis-San Francisco Railway has issued an inquiry for a dozen or more items of shop equipment. This adds to a fairly large total of prospective railroad buying, as recent sizable inquiries from the Baltimore & Ohio and the Missouri Pacific are still pending. The Rock Island is expected to issue a list of its 1927 tool requirements soon.

## New York

NEW YORK, March 8.

THE Niles-Bement-Pond Co. has received an order from the Japanese Government for arsenal machinery which will be manufactured by its Pratt & Whitney division at Hartford, Conn. The total of the order is not stated, but it is understood that it runs into six figures. Otherwise, there has been no machine tool buying of large importance in this district within the past week. Both orders and inquiries are in reduced number. Among the tools which have been sold are the following: Carwheel lathe to the Virginia Electric & Power Co., Norfolk, Va.; automatic cutting-off machine to the Boye & Emmes Machine Tool Co., Cincinnati; locomotive cylinder facing machine to the Monongahela Railroad; a 13-in. and a 16-in. lathe to a pipe fabricator in Jersey City, N. J.; a 13-in. lathe to the Union Mfg. Co., New Britain, Conn.; a 16-in. lathe to the Westinghouse Electric & Mfg. Co., East Pittsburgh; a 13-in. lathe to a tool manufacturer at Arlington, N. J.; a jig boring machine to a tool company in Detroit; an automatic milling machine to a company in St. Louis; a vertical drill press to a Brooklyn manufacturer.

The Ramsey Chain Co., Inc., Industrial Building, Albany, N. Y., manufacturer of silent chain transmissions, etc., is having plans drawn by the H. K. Ferguson Co. for a new plant on the Troy Road, to cost in excess of \$75,000 with equipment. Work is expected to begin during the summer.

The Mutual Electric & Hardware Mfg. Co., 28 Verandah Place, Brooklyn, is planning the installation of additional equipment at its plant, including a heavy-duty shear, shaper, and other tools.

The Cameron Machine Co., 61 Poplar Street, Brooklyn, has plans for a one-story addition and improvements in the present plant to cost about \$23,000. Louis Berger & Co., 1701 Myrtle Avenue, are architects.

The Empire Metal Cap Co., Inc., 254 Thirty-sixth Street, Brooklyn, has leased additional space at the Bush industrial terminal, South Brooklyn, for expansion.

The Hannon Garage, Inc., New York, has purchased a three-story building at 364-70 West Seventeenth Street for \$160,000 and will occupy for a service, repair and garage station.

The Johns-Manville Co., Madison Avenue and Forty-first Street, New York, manufacturer of roofing products, pipe coverings, etc., is said to have authorized plans for a new plant at Kansas City, Mo., for the production of asphalt shingles and kindred products, reported to cost in excess of \$350,000 with machinery. P. C. Pond, Greenwood Avenue, Waukegan, Ill., is engineer.

Users of tools are still slow in placing orders, and the volume of buying in the first week of March has shown no marked improvement over the average rate of February. March is usually one of the best months of the year; hence orders so far this month have fallen below expectations.

Outstanding in the week's business was an order placed with the Niles-Bement-Pond Co. by the Japanese Government for arsenal machinery, the total running into six figures. This is not only the largest export order received for machine tools in the United States in some time, but it is also one of the largest orders of any kind in recent months.

Among the larger buyers of tools have been the Delco Light Co., Dayton, Ohio, and the Mechanical Mfg. Co., Chicago.

The Weber-Bunke-Lange Coal Co., 270 West Ninety-sixth Street, New York, has acquired a block of property between 202nd and 203rd, fronting on the Harlem River, as a site for a new coal storage and distributing plant, to include a group of coal pockets, bunkers and buildings, with conveying, elevating and other equipment. An automobile service, repair and garage building for company motor trucks will be built. The plant is estimated to cost \$200,000.

The Linde Air Products Co., 30 East Forty-second Street, New York, manufacturer of industrial oxygen, welding apparatus, etc., has awarded a general contract to Donald Hall, Cotton Exchange Building, Houston, Tex., for a one-story plant at Houston, to cost about \$65,000 with equipment.

The Westchester Street Railway Co., Mount Vernon, N. Y., has filed plans for a new car barn, with shop and repair facilities to cost about \$225,000.

The Griscom-Russell Co., 285 Madison Avenue, New York, manufacturer of steam specialties, marine equipment, etc., is said to be planning a call for bids early in the spring for a one-story addition to its plant at Massillon, Ohio, to cost more than \$60,000 with equipment.

The Monahan Stone Co., 100 Roanoke Avenue, Newark, N. J., has filed plans for a one-story addition, 70 x 200 ft., to be used as a cutting and trimming shop. Mechanical handling equipment will be installed for large stone blocks. Frank J. McCann is president.

A. Lowenstein, 110 Little Street, Newark, N. J., rubber products, has plans for a one-story factory addition, 90 x 125 ft., to cost \$35,000. M. A. Wolf, 845 Broad Street, is architect.

The Board of Education, West Orange, N. J., plans the installation of manual training equipment in a proposed addition to the junior high school to cost more than \$200,000. Guilbert & Betelle, 20 Branford Place, Newark, are architects.

The Public Service Electric & Gas Co., Public Service Terminal, Newark, is disposing of a bond issue of \$19,800,000, a portion of the fund to be used for expansion and betterment in power plants and system. The company will take over the holdings of its affiliated interest, the Public Service Electric Power Co., which will be dissolved. Thomas N. McCarter is president.

Fire, March 2, at Pier K, Pennsylvania Railroad Co. foot of Second Street, Jersey City, N. J., destroyed three plants and a machine shop of the railroad company along the Hudson River waterfront, including the New York Lumber Terminal Supply Co., A. Mullenstein Rubber Co., and the Stulman Box Co.

The New York office of B. F. Sturtevant & Co. will move into the Graybar Building about April 1.

The Newark Malleable Iron Works, Newark, has installed a 20-ton air furnace, using pulverized coal for fuel, for melting malleable iron. This type of melting furnace, it is claimed, produces a grade of malleable cast iron of superior physical properties.



The Harrington-Mills Steel Co., Inc., has removed its offices to its warehouse at First Avenue and Forty-ninth Street, Brooklyn.

The Koehring Co. Associates, 50 Church Street, New York, have been appointed representatives for the Climax Engineering Co., Clinton, Iowa, in the following countries: Argentina, Colombia, Italy, Panama, India, Japan and the Philippine Islands.

The Service Metal Supply & Mfg. Corporation, 1498 Fulton Street, Brooklyn, has been organized with a capital stock of \$200,000 to manufacture tinmiths' supplies and do a jobbing business in tin plate, sheet iron and steel, metal lath and ceilings and non-ferrous rolled products.

## New England

Boston, March 7.

**S**ALES in this territory are still confined to single machines and the past week were somewhat fewer than for the one previous. Orders included a new universal boring machine to a Massachusetts shop, a gap lathe to a Connecticut firm, a Cincinnati shaper to a Massachusetts firm, two small but fairly expensive motor-driven grinding machines to a railroad shop, a used Bliss press to a nearby shop, two upright drills and a gear cutter, all used equipment, to three Massachusetts firms, and about a dozen miscellaneous new and used tools to companies in and about greater Boston. Pending inquiries are apparently no nearer closing than a week ago.

Small tools are selling better than a month ago, yet the market can hardly be termed active.

Possibly the slowness of companies in closing machinery business can be ascribed to general industrial conditions in New England. Investigation discloses that in proportion to other cities, Worcester, Mass., is the brightest industrial spot in New England, but in that city metal-working industries are less active than during the first two months of 1927. The year started with New England industries confident of a good business. February as a whole was fairly active with metal-working shops, but toward the last of the month there was a noticeable downward trend in the business curve. Today, in Boston alone, there are approximately 15,000 out of employment. These are not all machinists, yet the fact remains that there is a larger surplus of machinists in Boston than in several years. One trade authority states that for New England collectively the average working schedule of manufacturing plants is not more than four and one-half days per week, and many plants are on a three and one-half day schedule. Certain metal-working plants in greater Boston are reported as negotiating with outside States loaded with work for contracts. Shops in Pennsylvania, especially Erie, are said to be busy. The industrial New England uncertainty may be the reason for the slowness in closing on machine tool requirements which have been under negotiation from one to five months.

The Fafnir Bearing Co., New Britain, Conn., has applied for permission to erect a plant unit.

A small amount of equipment is required by the Gardner Metal Products Co., Gardner, Mass., to replace that recently destroyed by fire.

Edward F. Cahill, 530 Main Street, Providence, R. I., will soon start work on a one-story, 54 x 77 ft. automobile repair shop. Plans are private.

The town of North Tiverton, R. I., contemplates a water system that involves a pumping station, dam, etc. Frank Y. Hicks is chairman of the water board.

E. J. MacDonald, 77 Summer Street, Boston, architect and engineer, has asked bids on general contract for a one-story automobile service, repair and garage building, 100 x 175 ft., at Walnut and Center Streets, estimated to cost \$80,000 with equipment.

E. P. Sheldon & Son, 1009 Hospital Trust Building, Providence, architects, have closed bids on a two and one-half, 61 x 68 ft., machine shop addition for Henry Scott & Son, Blackstone Street, Providence.

The Springfield Agitator Co., Myrick Building, Springfield, Mass., patent mixing device, has incorporated with a capital of \$100,000 to manufacture its product. The Springfield Tool Co. has been making the device. John R. Fish, Beverly Road, West Springfield, Mass., is president of the new company.

The Edison Electric Illuminating Co., 70 State Street, Boston, has plans for a new one and two-story power plant, to cost in excess of \$75,000 with equipment. Bigelow & Wadsworth, 120 Tremont Street, are architects.

The American Chain Co., Bridgeport, Conn., is reported

to be considering the purchase of property at Los Angeles for the construction of a new branch plant. W. B. Laahar, president, is now on the Pacific Coast with view to selection of a site. The company has arranged for a preferred stock issue of \$11,000,000.

Fred Catalano, 280 Maple Avenue, Hartford, Conn., is completing plans for a one-story sheet metal works, 25 x 40 ft. D. A. Guerriero, Hartford, is architect.

The Board of Trustees, Rhode Island State College, Kingston, R. I., has plans under way for a new engineering building reported to cost \$215,000 with equipment. Bigelow, Kent, Willard & Co., Park Square Building, Boston, are architects.

Ovens, power equipment, conveying and other machinery will be installed in the proposed plant to be erected at Manchester, N. H., by Cote Brothers, 610 Main Street, to cost more than \$100,000 with machinery. The Butterfield-Guertin Co., 801 Beech Street, is architect.

The Judson L. Thompson Mfg. Co., Roberts Station, Waltham, Mass., manufacturer of rivets, bolts, etc., has awarded a general contract to the L. H. Shattuck Co., Manchester, N. H., for a three-story and basement addition, 50 x 125 ft., to cost in excess of \$70,000 with equipment. Arthur F. Gray, 33 State Street, Boston, is architect.

## Philadelphia

PHILADELPHIA, March 7.

**B**IDS will be asked soon by the Philadelphia Storage Battery Co., Ontario and C Streets, Philadelphia, for a three-story and basement addition, 50 x 92 ft., including improvements in present plant. Rankin & Kellogg, 1805 Walnut Street, are architects.

H. A. Weymann & Son, Inc., Hancock Street and Columbia Avenue, Philadelphia, manufacturer of musical instruments, has acquired a four-story factory on West Cumberland Street, totaling about 16,000 sq. ft. of floor space, for the establishment of a new plant. It is understood that the present works will be removed to the site.

The Preis-Nash Motor Co., Lycoming and Broad Streets, Philadelphia, local representative for the Nash automobile, has awarded a general contract to Paul Brosz, 2511 West Huntingdon Street, for its proposed two-story and basement service, repair and garage building, 112 x 135 ft., to cost \$100,000 with equipment.

Contract for the new tender shop for the Baldwin Locomotive Works, Broad and Spring Garden Streets, Philadelphia, at Eddystone, has been let to the Belmont Iron Works. It will total approximately 10 acres of floor space and will be equipped with a number of crane runways. The building is scheduled for completion before summer, when the tender shop at the Philadelphia plant will be removed to the new location.

The Universal Service Motors Co., Broad and Pine Streets, Philadelphia, has leased a six-story building to be erected on Walnut Street for a new service, repair and garage building. It is estimated to cost \$500,000 with equipment.

The Board of Education, Elkins Park, Pa., contemplates the installation of manual training equipment in the proposed addition to its Cheltenham high school to cost in excess of \$150,000, for which bids are being asked on a general contract until March 18. Davis, Dunlap & Barney, 1805 Walnut Street, Philadelphia, are architects.

G. B. Roth, 1629 Chestnut Street, Philadelphia, architect, has filed plans for a two-story and basement automobile service, repair and garage building, 90 x 125 ft., to cost about \$115,000 with equipment.

The Borough Council, Brant Beach, N. J., plans the installation of electrically-operated pumping equipment at the municipal waterworks, in connection with an expansion program.

The National Biscuit Co., 85 Ninth Avenue, New York, is reported to be considering the erection of a new multi-story plant at Trenton, N. J., for the manufacture of paper boxes and cartons for its food products. Officials of the city are in negotiation with the company regarding a suitable site. The project is expected to cost more than \$1,500,000.

The Norman P. Druck Motor Co., 636 East State Street, Trenton, N. J., will soon take bids for a two-story addition to its service, repair and garage building, 90 x 160 ft., to cost about \$75,000 with equipment. J. Osborne Hunt, 219 East Hanover Street, is architect.

The Lawrence Portland Cement Co., Northampton, Pa., has awarded a general contract to the Burrell Engineering & Construction Co., 513 West Jackson Boulevard, Chicago, for an addition to its plant at Thomaston, Me., comprising the former works of the New England Lime & Cement Co. The expansion will cost about \$200,000 with equipment.

## The Crane Market

THERE is a fair volume of new inquiry for overhead equipment but current purchasing continues small. Inquiries for locomotive cranes are also accumulating, but few awards are reported. Among prospective purchasers of locomotive cranes neither the Canadian National Railways nor the Boston & Maine Railroad have closed on their recent inquiries. An active purchaser of overhead equipment in the past week or two was the Phoenix Utility Co., 71 Broadway, New York, which has closed on four cranes and an electric hoist.

Among recent purchases are:

Phoenix Utility Co., 71 Broadway, New York, two 60 ton 1-motor power house cranes for Harrisburg and Mechanicsville, Pa., reported purchased from the Cleveland Crane & Engineering Co., one 2-ton and one 4-ton, single I-beam hand power crane for New Orleans from an unnamed builder and a 5-ton electric monorail hoist from the American Crane Co.

M. A. Hanna Co., Detroit, a 170-ton hot metal crane from the Morgan Engineering Co.

Interstate Iron & Steel Co., Chicago, two 160-ton ladle cranes from the Morgan Engineering Co.

American Rolling Mill Co., Middletown, Ohio, two 40-ton overhead cranes, one for Ashland, Ky., the other for Zanesville, Ohio, from the Morgan Engineering Co.

Alabama Power Co., Birmingham, Ala., a 30-ton, 8-wheel locomotive crane from the Orton Crane & Shovel Co.

Coojan Gravel Co., Peoria, Ill., an 18-ton, standard gage locomotive crane from the Orton Crane & Shovel Co.

R. G. Flaeger & Co., Champaign, Ill., a standard crawl-tread locomotive crane with  $\frac{3}{4}$ -cu. yd. bucket, from the Orton Crane & Shovel Co.

New York, New Haven & Hartford Railroad, a 10-ton, 60-ft. span double trolley crane, through Robert Abel, Boston, from Morris Brothers, Inc.

The Allentown School Board, Allentown, Pa., has authorized the immediate advertising of bids for milling machines and small bench lathes for the manual training departments in the Central and First Ward junior high schools.

The Atlantic City Electric Co., Atlantic City, N. J., will issue bonds in amount of \$1,262,000, and 1115 shares of stock, no par value, a portion of the proceeds to be used for extensions and improvements in plants and system.

The Board of Education, Norristown, Pa., is said to be planning the installation of manual training equipment in the new David Rittenhouse junior high school to cost close to \$500,000, for which a general contract has been let to P. H. Kelly Co., Inc., Midvale Avenue, near Frederick Street, Philadelphia.

John Nacey, 7254 Paschall Avenue, Philadelphia, dealer in metal cornices, skylights and windows and other sheet metal and roofing products, has reorganized his business under the name of the John Nacey Co.

The Charles Christos Machine Co., Philadelphia, has been organized to manufacture dies and to engage in the improvement and production of a new expansion polishing wheel. The company may be addressed in care of Thomas H. Lee, 1718 Packard Building, Philadelphia.

The Pennsylvania Stamping Corporation, York, Pa., has been organized to purchase the assets of the Pennsylvania Stamping Co. and will continue the manufacture of saws, furniture casters, toys and stamped metal products. It will require a small amount of new dies and equipment.

Power Co., an affiliated organization with majority of power to be used by the Broad River company. Murray & Flood, Grand Central Terminal, New York, are consulting engineers. W. S. Barstow is head.

The Continental Roofing & Mfg. Co., 1200 South Sixteenth Street, Baltimore, has awarded a general contract to the Consolidated Engineering Co., 20 East Franklin Street, for its one-story and basement addition, 70 x 100 ft., to cost close to \$50,000 with equipment. T. M. Rianhard is president.

The Fayetteville Ice & Coal Co., Fayetteville, Ga., has acquired a local site, and plans the early construction of a one-story ice-manufacturing plant. The machinery will be electrically operated. L. G. Perry is head.

The City Council, Lynchburg, Va., is said to be planning the installation of pumping machinery in connection with proposed extensions and improvements in the municipal waterworks. A fund of \$165,000 is being arranged. R. W. B. Hart is city manager.

The Hackley Morrison Co., 204-6 North Jefferson Street, Richmond, Va., machinery dealer, has inquiries out for a motor-driven air compressor, capacity about 900 cu. ft. per min.

William P. Taylor, town manager, Crewe, Va., is asking bids until March 22 for equipment for a municipal waterworks and sewage system, including three 350-gal. per min. pumping units, two 500-gal. per min. pumps, steel water tank and tower, electric transmission line, etc. The J. B. McCrary Engineering Corporation, Atlanta, Ga., is engineer.

## South Atlantic States

BALTIMORE, March 7.

THE Golden Foundry & Machine Co., Columbus, Ga., has plans for an addition, 60 x 70 ft., multi-story type, for the pattern shop and other departments. J. E. Sirrine & Co., Greenville, S. C., are engineers.

The Hackney Wagon Co., Wilson, N. C., manufacturer of automobile bodies, is planning to rebuild the portion of its plant destroyed by fire Feb. 28, with loss estimated in excess of \$200,000 with equipment.

The Virginia Iron, Coal & Coke Co., Roanoke, Va., is reported to be planning extensions and improvements at its Sexton mining properties, near Toms Creek, Va., to include the installation of a steel trolley, aerial tramway and other equipment, to cost in excess of \$200,000.

C. B. Davis, Cordele, Ga., has inquiries out for a steam engine, about 60 hp. capacity, with 100-hp. boiler and accessories.

The Board of District Commissioners, District Building, Washington, contemplates the installation of manual training equipment in the proposed Gordon junior high school at Thirty-fourth Street and Wisconsin Avenue to cost \$500,000, for which plans will be completed soon by A. L. Harris, District Building, municipal architect.

The Gaston County Board of Education, Gastonia, N. C., has tentative plans for the construction of a one-story machine and repair works, with garage, for County school motor truck service. Estimates of cost will soon be made.

The General Gas & Electric Corporation, 50 Pine Street, New York, operating the Broad River Power Co., Columbia, S. C., and other power interests in that section, has authorized the construction of a new hydroelectric generating plant on the Saluda River, about 10 miles from Columbia. The plant will be equipped for an initial installation of 200,000 hp. A steel tower transmission line will be built. The project will be carried out by the Lexington Water

## Pittsburgh

PITTSBURGH, March 7.

MACHINE tool dealers generally report some improvement in sales the past week, but still note a paucity of new inquiry. The Westinghouse Electric & Mfg. Co. is purchasing steadily against its first quarter list and stands out prominently as a buyer. The Baltimore & Ohio list closed Feb. 28 and bids now are being tabulated.

The American Radiator Co. has acquired the Hummer Engine Works, Springfield, Ill., erected about five years ago by Montgomery Ward & Co. for the building of gas engines, but never operated. The property includes manufacturing buildings of steel, brick and concrete which will be equipped by the purchasing company for the manufacture of its specialty products.

The Kuhn-Lawry Co., Pittsburgh, doing a jobbing and brokerage business in iron and steel, has acquired for a warehouse one of the buildings of the former Government arsenal at Thirty-ninth and Butler Streets, Pittsburgh, and offices of the company have been moved from the Oliver Building to the warehouse.

Michael Wolfinger, 1429 Hanlon Street, Pittsburgh, will soon begin work on the erection of a one-story electrical repair shop.

The Board of Education, North Braddock, Pa., is planning the installation of manual training equipment in a proposed one and two-story junior high school, estimated to cost \$200,000, for which plans will be drawn by Carlisle & Sharer, Martin Building, Pittsburgh, architects.

The Appalachian Electric Power Co., Bluefield, W. Va., is said to have arranged a construction and improvement program during 1927 to cost about \$3,500,000, including an addition to the power plant at Glen Lynn, Va., and installa-



tion of a new 35,000 hp. generating unit. Automatic power substations will be built at Glen Lynn, Saltville and Kingsport, W. Va.

The City Council, Fairmont, W. Va., plans the installation of pumping equipment and power apparatus in connection with proposed extensions in the municipal waterworks and sewage systems. An election has been called for March 15 to approve bonds for \$300,000 for the project.

The Pittsburgh Plate Glass Co., Frick Building, Pittsburgh, is said to be planning the installation of additional equipment at its plant at Clarksburg, W. Va., including sheet glass drawing machinery, etc.

The Plaff & Smith Builders' Supply Co., 1007 Bullitt Street, Charleston, W. Va., is planning the purchase of a crawler type traction crane, with 40 to 50-ft. boom, for handling a 1 1/4-yd. capacity clamshell bucket, gas-operated unit preferred.

The Champion Switch Co., 550 Abbott Road, Buffalo, has completed negotiations for about 10 acres at Kenova, W. Va., heretofore held by the Kenova Mine Car Co., as a site for a new plant for the manufacture of high-tension switches and other electrical equipment. The company is affiliated with the Jeffrey-Dewitt Insulator Co., manufacturer of high-tension electric insulators, with plant on adjoining site, and this works also will be enlarged. The entire project will cost in excess of \$300,000 with machinery.

## Buffalo

BUFFALO, March 7.

PLANS have been authorized by the Department of Public Safety, Buffalo, F. X. Schwab, director, for the installation of tools and equipment in the municipal automobile repair shop and garage at 257 East Ferry Street.

The Niagara Auto Wheel & Spring Works, Inc., Niagara Falls, N. Y., has been organized with a capital of \$25,000 to take over and expand the company of the same name, now operating local plants at 1416 Pine Avenue and on Lewiston Road. S. and D. Gebell head the new company.

The Board of Education, East Aurora, N. Y., is said to be planning the installation of manual training equipment in a proposed three-story addition to the high school to cost \$175,000. Aaron R. Merritt, Erie County Bank Building, Buffalo, is architect.

The American Blue Stone Co., Portageville, N. Y., has work in progress on an expansion and improvement program at its local Ambluco quarries, to include the installation of additional equipment. The property is being electrified.

J. D. Meehan, Everson Building, Syracuse, N. Y., architect, is completing plans for a two-story and basement automobile service, repair and garage building, 75 x 150 ft., to cost about \$35,000 with equipment.

The Board of Education, Horseheads, N. Y., plans the installation of manual training equipment in its proposed two-story and basement high school to cost \$225,000, for which superstructure will soon begin. H. M. Haskell, Hulett Building, Elmira, N. Y., is architect; Beman & Cadec, White Building, Buffalo, are steam and electric engineers.

The Common Council, Hemlock Lake, N. Y., contemplates the installation of pumping machinery and auxiliary equipment in connection with extensions and betterments in the municipal waterworks, to cost \$200,000. C. Poole, Rochester, N. Y., is engineer, in charge.

## Indiana

INDIANAPOLIS, March 7.

CONTRACT has been awarded by the B. & F. Mfg. Co., 2018 Massachusetts Avenue, Indianapolis, manufacturer of plumbing equipment and supplies, to the E. H. Bass Co., local, for its one-story foundry, 60 x 110 ft., to cost about \$45,000 with equipment.

The Ball Brothers Co., Muncie, Ind., manufacturer of glass products, is reported to be planning the construction of a new plant at Noblesville, Ind., to cost close to \$300,000 with equipment.

The Wadley Packing Co., 615 South Sixth Street, Terre Haute, Ind., poultry, has filed plans for a three-story cold storage and refrigerating plant, 90 x 92 ft., to cost \$100,000 with equipment. Fred J. Leidman is vice-president.

The Woodward Pattern Works, 321 North Michigan Street, South Bend, Ind., manufacturer of metal and wood patterns, is said to be planning an early call for bids for a proposed one-story and basement plant, 40 x 100 ft., to cost about \$25,000 with equipment. M. E. Smith, 323 South Main Street, is architect. J. H. Woodward is president.

W. F. Kernodle, Frankfort, Ind., automobile dealer, and associates are having plans completed for a new six-story

automobile service, repair and garage building, to cost \$250,000 with equipment. Work will begin in April. Leonard & Wolf, Frankfort, are architects.

The Board of Education, Delphi, Ind., contemplates the installation of manual training equipment in a proposed two-story and basement high school to cost \$150,000. O. P. Gordon, Thayer Building, Greenfield, Ind., architect, will ask bids soon on a general contract.

The Beveridge Paper Co., 717 West Washington Street, Indianapolis, will begin the construction of a three-story factory, 115 x 130 ft., to cost about \$100,000 with equipment. Mothershead & Fitton, 542 North Meridian Street, are architects and contractors.

The Board of Education, New Albany, Ind., plans the installation of manual training equipment in its proposed high school estimated to cost \$375,000, for which superstructure will soon be placed under way. W. C. Findt, High School Building, Springfield, Ohio, is architect.

S. F. Bowser & Co., Inc., Fort Wayne, Ind., have advised THE IRON AGE that an item published in our issue of Feb. 17 to the effect that this company is planning an enlargement of its plant at San Antonio, Tex., is incorrect. S. F. Bowser & Co. have no plant at San Antonio.

The Dry Wood Bending Co., Muncie, Ind., has been organized to manufacture a patent machine for the dry bending of wood, and also to do wood bending.

## Detroit

DETROIT, March 7.

THE Square D Co., 6060 Rivard Street, Detroit, manufacturer of electrical equipment and devices, has awarded a general contract to W. E. Wood & Co., Ford Building, for an addition to cost about \$50,000 with equipment.

Sidney Volk, Benton Harbor, Mich., is at the head of a project to erect a plant for the manufacture of a new fire-proof skylight. A company will be formed with capital of \$30,000 to carry out the enterprise. The initial factory will cost about \$25,000.

The Detroit City Gas Co., 415 Clifford Street, Detroit, has approved a construction and improvement program during 1927 to cost \$7,600,000. The work will include plant additions, generating machinery and accessory equipment to cost \$2,770,000; two new gas holders, each with capacity of 10 million cu. ft., system extensions, etc.

The Chamber of Commerce, Grand Haven, Mich., C. A. Gross, secretary, has information regarding a company, name temporarily withheld, which contemplates the erection of a plant for the manufacture of piston rings and kindred automotive specialties.

The Superior Wire Co., Kalamazoo, Mich., manufacturer of paper mill equipment, has taken over the local plant and business of the MacKay Wire Works, manufacturer of similar equipment. The new owner will continue the operation of the MacKay plant and will make improvements. Production will be devoted to the manufacture of wires for paper-making machines, wires for screen plates, coating mill screens, etc. William A. Biddlecome will be in charge of operations.

Bids will be asked by the Board of Education, Sault Ste. Marie, Mich., about March 15 for its proposed three-story and basement high school, to include a manual training department, estimated to cost \$300,000. J. D. Chubb, 109 North Dearborn Street, Chicago, is architect.

The Peninsular Power Co., Iron River, Mich., is planning the construction of a new automatic power substation on local site, to cost \$75,000 with equipment. Headquarters are at Madison, Wis. The company has arranged an expansion and improvement program during the year to cost about \$460,000.

The Central States Utilities Co., Coldwater, Mich., has plans for a new artificial gas plant of coal-gas type, to cost \$125,000 with equipment. H. A. Sebald is local manager.

The H. J. Hunt Show Case Co. has removed its plant from Detroit to Bay City, Mich., and has disposed of the former factory at the first noted place. Operations will be concentrated at the Bay City works, which provide about 60,000 sq. ft. of manufacturing space.

The Citizens Gas Fuel Co., Adrian, Mich., will make extensions and improvements in its generating plant and system to cost about \$200,000 with equipment.

The Michigan Foundry & Machine Co., 1448 North Pitcher Street, Kalamazoo, Mich., has been incorporated with a capital stock of \$20,000 to make gray iron castings.

The Macklin Co., Jackson, Mich., has been organized with a capital stock of \$250,000 to manufacture abrasive products, grinding wheels, etc. It has a factory under construction at Jackson and equipment has been purchased. Production will begin late in April.

The David J. Joseph Co. is now located at 2214-2215 Book Tower Building, Detroit.

The Coghlin Foundry Co., Harbaugh Avenue and Wabash Railroad, Detroit, has been organized to manufacture gray iron castings. It occupies the plant formerly operated by the Michigan Gray Iron Castings Co., and will be in the market for equipment.

The Novo Engine Co., Lansing, Mich., has added the following to its list of distributors: Contractors Sales Co., Inc., Albany, N. Y.; Wheeler Murray Co., Rochester, N. Y.; McCracken-Ripley Co., Portland, Ore., and Hudson Supply & Equipment Co., Washington.

The Konkrestone Construction Co., Inc., 416 Gilbert Building, Grand Rapids, Mich., has been organized with a paid in capital of \$30,000 to lease patent rights on a system of forms or molds for forming concrete. The company is experimenting with an automatic machine for making steel wire ties which at present are being manufactured on contract.

## Chicago

CHICAGO, March 7.

THE volume of machine tool sales is at about the same level as that of last week, but the individual machines sold have been of larger size. Inquiry is still scattered but is more numerous and dealers are looking forward to business in March averaging better than either February or January.

A Western railroad has ordered a 32-in. shaper and the Chicago & Eastern Illinois will take prices on a 500-ton hydraulic double-end wheel-press. The Mechanical Mfg. Co., Chicago, has purchased several milling machines and a radial drill. A maker of textile machinery west of Chicago has placed a 24-in. shaper. Other sales include a 72-in. grinding machine, a centerless grinder, a die sinker, a vertical milling machine, two horizontal millers and three horizontal-bar 5-in. boring machines.

The Santa Fe railroad is asking for prices on the following motor-driven tools:

- Side-rod boring and facing machine.
- 20-in. shaper.
- 26-in. x 10-ft. lathe.
- 54-in. tire-turning lathe.
- 6-in. hack saw.
- 16-in. heavy-duty slotter.
- Norton type carwheel grinding machine.
- 6-ft. radial drill.
- Heavy-duty coach wheel tire turning lathe.
- Automatic rip and cross cut circular saw.
- Carwheel journal turning machine.
- Radius link grinder.
- Heavy-duty piston rod grinding machine.
- 20-in. drill press.
- Four 24-in. emery wheel grinders.
- 4-ft. radial drill.
- 1500-lb. single-frame steam hammer.

The Peoria Machine Shop, Peoria, Ill., has been incorporated with \$20,000 capital stock to continue the manufacture of automobile parts and the building and repair of motors, the business formerly being carried on by A. J. Traeger. The new company was formed to expand activities.

The Village Board, Wauconda, Ill., is having plans prepared for a municipal waterworks which will include the drilling of a 10-in. well and the erection of an elevated gravity-pressure tank.

The City Council, Thebes, Ill., will purchase a 25,000-gal. per min. centrifugal pump, a 40,000-gal. elevated steel tank and tower and other equipment in connection with a proposed municipal waterworks. The Caldwell Engineering Co., 36 North Side Square, Jacksonville, Ill., is engineer.

The Cyclops Steel Co., Titusville, Pa., and the Universal Steel Co., Bridgeville, Pa., have removed their Chicago offices to 565 West Washington Boulevard. The former company continues to maintain a warehouse at 20 North Sangamon Street, Chicago. L. S. Nutting is district manager of both companies.

The Illinois Pipe & Mfg. Co., 3437 South Lawndale Avenue, Chicago, has awarded a general contract to the Abell-Howe Co., 53 West Jackson Boulevard, for a new one-story plant to cost \$30,000. The contractor also acted as architect for the work.

The C. S. Card Iron Works Co., West Sixteenth Avenue, Denver, Colo., will begin the construction of a one-story addition, 40 x 240 ft., for which plans were drawn by Mountjoy & Frewen, Patterson Building, architects, to cost about \$60,000, with equipment.

The Western Electric Co., Hawthorne, Ill., will begin work soon on a multi-story addition at its local plant for the production of lead cables, reported to cost more than \$150,000 with equipment.

The B. W. Electrical Specialty Co., 7709 Kimbark Avenue,

Chicago, has filed plans for a new one-story plant, 75 x 320 ft., to cost close to \$75,000 with equipment. T. B. Jorgensen, Burnham Building, is architect.

The Interstate Power Co., 327 South La Salle Street, Chicago, is reported to be planning the construction of a new power house at Decorah, Iowa, and improvements in the present generating station and power dam at that location. The company has recently arranged a bond issue of \$7,500,000.

Bids will be asked soon by the City Council, Duquoin, Ill., for a municipal waterworks to cost about \$400,000, the installation to include pumping and power equipment, filtration apparatus, etc. T. B. Wilson, Marion, Ill., is engineer.

The Traux-Traer Coal Co., Columbus, N. D., has plans for the development and operation of mining properties at Velva, N. D., to include the installation of a tippie, stripping shovel of 8-yd. capacity, loading shovel of 2½-yd. rating, and other machinery. The project will include a one-story machine shop, one-story forge and blacksmith shop and engine house for mine locomotives. It is proposed to construct a power plant on the Mouse River, near Voltaire, for service at the properties. The entire project will cost in excess of \$800,000. E. M. Traux is president.

The Denver & Rio Grande Railroad Co., Denver, Colo., is planning to rebuild the portion of the forge and blacksmith shop at its Burnham repair works, damaged by fire Feb. 23.

The Central Illinois Public Service Co., 130 South Sixth Street, Springfield, Ill., is completing plans for a one-story addition to its ice-manufacturing plant and expects to ask bids in the spring. It will cost in excess of \$50,000 with equipment.

## St. Louis

ST. LOUIS, March 7.

THE St. Louis-San Francisco Railroad has issued a list of its shop equipment requirements as follows:

- Southwark No. 7 pyramid type plate bending roll; capacity 20 ft. of 1¼-in. plate.
- Sellers No. 2 locomotive boiler washer and filler.
- Bridgeport 36-in. heavy-duty face grinder with 32-in. sectional grinding wheel chuck.
- Rooksby No. 2 portable locomotive cylinder or flange facing machine.
- Swift No. 35 electric flue welding machine for welding tubes and flues up to 6-in. diameter.
- Jarecki No. 440 pipe threading machine.
- Jarecki No. 225 pipe threading machine.
- Morgan valve setting machine.
- Ohio 36-in. Dreadnaught shaper.
- Portable journal truing machine.
- Micro model F-G railroad internal grinder.
- Niles-Bement-Pond combination journal turning and axle lathe.

Contract has been let by the Spencer Trailer Co., Augusta, Kan., to Daniel Council, Augusta, without competition, for its proposed one-story plant, 60 x 300 ft., on site, recently acquired, to cost about \$30,000 with equipment. The company was organized a few weeks ago by Fred G. Spencer, to manufacture trailers for motor trucks, etc. Edward Florsblom, Sedgwick Building, Wichita, Kan., is architect.

The Board of Public Service, City Hall, St. Louis, E. R. Kinsey, president, expects to ask bids in April on a general contract for a proposed municipal service and repair building to be four stories and basement, 250 x 350 ft., estimated to cost \$800,000 with equipment. Study & Farrar, Arcade Building, are architects.

Swift & Co., 800 South Vandeventer Street, St. Louis, meat packers, have awarded a general contract to the McKelvey Construction Co., 3500 West Pine Street, for a one-story machine shop, 60 x 100 ft., to cost approximately \$18,000.

The Board of Education, Chanute, Kan., will ask bids soon for a two-story and basement manual training school, 60 x 105 ft., to cost about \$65,000. Thomas W. Williamson & Co., Central Bank Building, Topeka, Kan., are architects.

The Southwestern Power & Light Co., Lawton, Okla., will build an ice plant, 80 x 100 ft. Ralph H. Oliver, 115 South Dearborn Street, Chicago, is engineer.

The Board of Education, Topeka, Kan., plans the installation of manual training equipment in its proposed three-story junior high school to cost \$200,000. Thomas W. Williamson & Co., Central Bank Building, architect, will ask bids soon.

The Skelly Oil Co., Tulsa, Okla., has plans for the early construction of a new gasoline refinery in the Panhandle oil field, Texas, on site, recently acquired. It will have a capacity for 50,000,000 cu. ft. of gas daily, and is reported to cost in excess of \$200,000.

The Common Council, Imperial, Neb., is planning exten-



sions and improvements in the municipal electric light and water plant, to include the installation of an oil-operated engine and other equipment, to cost about \$25,000. W. C. Hill is city clerk.

The Arkansas Foundry Co., 1500 East Sixth Street, Little Rock, Ark., has plans for a one-story addition to cost about \$20,000 with equipment.

Jacob Cohen, president Rosedel Garage, Inc., 6120 Delmar Boulevard, St. Louis, has leased a three-story building to be erected at 3656 Washington Boulevard for the establishment of a new service, repair and garage building, to cost more than \$100,000, and to be known as the Washington Garage. A battery shop will be installed in addition to machine and repair shop.

## Cincinnati

CINCINNATI, March 7.

**A**THOUGH there has been a slight improvement the past week, the machine tool market continues quiet. Inquiries are of good volume, but buyers in general are hesitant about placing orders. Builders had hoped that extensive purchasing would open up during March, which usually is one of the best months of the year, but bookings to date have fallen below expectations. Production of machine tools is on a moderate basis. Operations, however, are not being maintained on the heavy schedule in effect during the fall of 1926.

Cincinnati Grinders, Inc., has bought four 48-in. x 48-in. x 20-ft. four-head reversible motor-driven planers from the Cincinnati Planer Co. for precision work on planing grinder beds. The Delco Light Co. has purchased a number of tapping machines as well as other tools. A Pittsburgh tube company is understood to have contracted for five lathes for immediate delivery. The Louisville & Nashville has purchased a 42-in. boring mill, while word has been received that the Rock Island will issue a sizable list in April. Bids have gone in on the 43 tools to be bought by the Baltimore & Ohio, but none of the equipment has been ordered as yet.

The United Welding Co., Middletown, Ohio, recently incorporated, has purchased the assets of the C. C. Fouts Co., local, and now is conducting a business in welding, welded sheet metal products and a welding engineering service. W. W. Petry, W. R. Crane and C. W. Shartle, Jr., are the members of the firm. Mr. Petry for several years was in charge of welding for the American Rolling Mill Co. and is also a consultant on welding. Mr. Crane has been connected with the sales department of the American Rolling Mill Co. and will have charge of sales for the new company. Mr. Shartle has long been identified with the Shartle Brothers Machine Co., Middletown.

Assets and real estate of the Lebarjan Mfg. Co. and the Precision Machine Shop, 521 Hanover Street, Hamilton, Ohio, have been purchased by R. A. Kennedy and R. E. Asbury who will operate the business under the name of the Hamilton Engineering Products Co. The new company will continue the manufacture of music roll perforators, do automobile cylinder regrinding, and general repairing and machine shop work carried on by the former owners. It will also design and build special machinery, tools and dies. Mr. Kennedy has been connected with the Hamilton plant of the Ford Motor Co. as director of maintenance. Mr. Asbury formerly was superintendent of the Hamilton Machine Tool Co.

Aluminum Industries, Inc., Cincinnati, has been incorporated with a capital stock of \$250,000 to smelt and refine aluminum and its alloys for the foundry trade, and permanent mold castings and sand castings for the automobile trade. It will be in the market continuously for aluminum scrap.

The Southern Veneer Mfg. Co., Twenty-first Street and Standard Avenue, Louisville, has plans for a one-story addition, 60 x 220 ft., estimated to cost \$40,000 with equipment. Joseph & Joseph, Francis Building, are architects.

The Nashville Warehouse & Elevator Corporation, 1117 Fourth Avenue, South, Nashville, Tenn., has plans under way for a seven-story grain elevator, to cost about \$250,000 with elevating, screening and other equipment. S. M. Allen, Jr., is president.

Sears, Roebuck & Co., Chicago, have awarded a general contract to the B. W. Construction Co., 720 Cass Street, Chicago, for their proposed nine-story storage and distributing plant at Memphis, Tenn., to cost about \$600,000. George C. Nimmons & Co., 122 South Michigan Avenue, Chicago, are architects; Martin C. Schwab, 30 North Michigan Boulevard, is engineer.

The Board of Public Works, Columbus, Ohio, is considering the installation of additional pumping machinery at the municipal waterworks to provide an increase of 30 million

gal. per day. A booster pumping station is being planned also. R. H. Simpson is city engineer.

The Terminal Cold Storage & Ice Co., Eaker Street, Dayton, Ohio, has filed plans for an addition to its cold storage and refrigerating plant, estimated to cost \$50,000.

The Chevrolet Motor Co., Memphis, Tenn., is planning the construction of a factory branch, service, repair and sales building, 90 x 170 ft., to cost about \$130,000. C. G. Smith is local manager.

The Slip-Not Belting Corporation, Kingsport, Tenn., manufacturer of mechanical belting, has arranged for the establishment of a factory branch at Nashville, Tenn. E. E. Webster will be in charge.

The Board of Education, Wyoming, Ohio, contemplates the installation of manual training equipment in a proposed new high school, to cost in excess of \$175,000, for which bids are being asked on a general contract until March 21. Samuel Hannaford & Sons, Cincinnati, are architects.

## Gulf States

BIRMINGHAM, March 7.

**T**HE Central Power & Light Co., First National Bank Building, San Antonio, Tex., has plans for extensions in its steam-operated electric power plant at Childress, Tex., with installation of additional equipment, to cost more than \$50,000. The company is considering also the construction of a hydroelectric generating plant in the vicinity of Esteline, Tex., to cost more than \$250,000 with equipment.

Ovens, power equipment, conveying and other machinery will be installed in the proposed three-story plant to be erected by the Lone Star Baking Co., 902 Commerce Street, San Antonio, Tex., to cost \$250,000 with equipment.

The Steel City Chevrolet Co., 400 North Eighteenth Street, Ensley, Ala., local representative for the Chevrolet automobile, has leased a two-story building, 85 x 150 ft., to be constructed, for a new service, repair and garage building, estimated to cost \$75,000 with equipment.

The Board of Education, Amarillo, Tex., plans the installation of manual training equipment in its proposed two-story high school to cost \$300,000, for which bids have been asked on a general contract. E. F. Rittenberry, Blackburn Building, is architect.

The Faulkner Reinforced-Concrete Pipe Co., Carter Building, Hattiesburg, Miss., is completing plans for the establishment of a new pipe works at Jackson, Miss., to cost close to \$60,000 with machinery. L. E. Faulkner is president.

R. E. Boggs, Age-Herald Building, Birmingham, machinery dealer, has inquiries out for one 220-hp. horizontal return tubular boiler, with metal stack, breeching and accessories.

The East Texas Public Service Co., Marshall, Tex., has plans for a new ice-manufacturing plant at Winnsboro, Tex., It will also make extensions and betterments in its ice-manufacturing plant at Atlanta, Tex., including the installation of additional equipment. A cold storage plant will be built at Carthage, Tex.

The City Council, West Palm Beach, Fla., is considering rebuilding the municipal automobile service, repair and garage building, recently destroyed by fire, with loss estimated at \$125,000 including equipment.

The Putnam Wood Products Co., Palatka, Fla., has acquired the local plant of the Florida Woodenware Co., recently partially destroyed by fire. The new owner will rebuild and plans enlargements. W. M. Goethe is secretary.

The Birmingham Water Works Co., Birmingham, is disposing of a bond issue of \$800,000, a portion of the proceeds to be used for extensions and improvements in its water-works and systems. D. M. Watt is president.

The Blocton Ice Co., Blocton, Ala., will erect a new one-story ice-manufacturing plant to cost about \$35,000 with equipment. Work will begin at once.

The Universal Metal Mfg. Co., Birmingham, manufacturer of metal filing cabinets, has begun the construction of a new plant at Tarrant City, Ala., to cost about \$45,000 with equipment.

The Board of Education, Brenham, Tex., is considering the installation of manual training equipment in a proposed new two-story high school to cost \$175,000, for which bids will be asked on a general contract before the close of the month. Giesecke & Harris, 207 West Seventh Street, Austin, Tex., are architects.

The Gulf Coast Shell & Cement Co., 2617 Caroline Street, Houston, Tex., J. E. Reed, head, is said to have plans under way for a proposed cement mill in this vicinity, using shells as source of raw material. Prior to erection, work will be started on a new shell-handling and distributing plant to cost about \$150,000 with machinery. The entire project will cost more than \$500,000.

The City Council, Monroe, La., plans the installation of pumping machinery and power equipment in connection with extensions and improvements in the municipal waterworks. A fund of more than \$500,000 will be arranged for the project. The Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., is engineer.

The Lone Star Road Machinery Co., Inc., Dallas, Tex., has been organized to act as district representative in that territory for the Russell Grader Mfg. Co., Minneapolis, and to deal in contractors' equipment.

The Cotton Chopper Co., Inc., 308 West Seventh Street, Fort Worth, Tex., has been organized to manufacture the Martin rotary cotton chopper and cultivator. The machine will be manufactured on contract, and the company is prepared to consider quotations from implement manufacturers for which specifications will be furnished upon request.

## Milwaukee

MILWAUKEE, March 7.

**R**EPLACEMENT needs still dominate the call for machine tools and while inquiry has improved, the volume of sales remains comparatively small. With few exceptions, orders call for one or two units, and the character of inquiry is of much the same order. Production is at a moderate rate, with deliveries by some plants somewhat in excess of new bookings.

The LeRoi Co., 660 Sixtieth Avenue, West Allis, Milwaukee, manufacturer of automobile, truck and tractor engines, self-contained generating plants, etc., has let the general contract to Bentley Brothers, 808 South Pierce Street, Milwaukee, for a one-story brick and steel addition, 175 x 357 ft. Three cranes will be purchased. It is understood that the LeRoi Co. has purchased the business and equipment of the Beaver Mfg. Co. gasoline engines, 35 Twenty-fifth Street, Milwaukee, and will move the machinery to the new shop, making some additions of new tools. C. W. Pendock is general manager.

The Vulcan Last Co., Antigo, Wis., manufacturer of shoe lasts and hardwood by-products, will begin work shortly on plant improvements costing about \$60,000, including 19 additional dry kilns. Some special wood-working machinery will be required. Frank Knott is local manager.

The Phoenix Chair Co., South Twelfth and Virginia Streets, Sheboygan, Wis., has engaged Chas. A. Cahill & Sons, consulting engineers, 217 West Water Street, Milwaukee, to make a survey and report of mechanical and power requirements. The probable cost is estimated at upward of \$100,000.

The Waukesha Motor Co., Waukesha, Wis., manufacturer of heavy duty gasoline engines, expects to take occupancy about March 28 of a one-story addition, 88 x 155 ft., for which equipment is being purchased. The investment will total about \$85,000. Harry L. Horning is president and chief engineer.

The Racine Polishing & Plating Co. is a new \$25,000 corporation organized at Racine, Wis., to establish a shop at Bridge and Ontario Streets. The principals are Fred Hau, 1727 Spring Street; Jacob Hay and Gilbert E. Brach, attorney.

The Beloit, Wis., Board of Industrial Education has approved plans by Merman & Skogstad, architects, La Crosse, Wis., for the proposed new central vocational school, estimated to cost \$250,000 with equipment and machinery. Bids will be asked shortly. F. E. Converse is chairman.

The Evinrude Motor Co., Twenty-seventh and Lake Streets, Milwaukee, manufacturer of outboard motors, has acquired the business and equipment of the Koban Co., 242 South Water Street, engaged in the same line, and is consolidating operations in the Evinrude shops. A. J. Petrie is president and general manager.

The Apex Fabricating & Mfg. Co., New York, manufacturer of aluminum ware has plans for the establishment of a new production center at Three Lakes, Oneida County, Wis., by April 1. The company is a subsidiary of a national chain store system through which the entire output is distributed. Further details of the project have not been given out.

The Badger Metal Toy Co., Racine, Wis., has been formed by Addison Harlow, Milton E. Wisor and Milton Peterson, all of Rural Route 4, Racine, to manufacture lead and other metal toys and novelties. A shop has been secured and equipment is being purchased.

Municipal Foundries, Inc., West Allis, Milwaukee, has been incorporated with \$50,000 capital stock to establish a foundry and machine shop, specializing in castings for municipal projects. The principals are Palmer E. Hansen, C. F. Rouiller and LeRoy G. Zimmermann, 2826 State Street, Milwaukee.

The Northern Conveyor & Mfg. Co., Janesville, Wis.,

which is completing an addition to its plant, has increased its capitalization from \$100,000 to \$200,000 to accommodate enlargement of plant and business.

The Keller Tool & Machine Works, Eau Claire, Wis., has added a forge department, the equipment in which includes a 900-lb. Morgan & Wright steam hammer and a 200-lb. Bradley hammer, providing facilities for making both light and heavy forgings.

## Cleveland

CLEVELAND, March 7.

**T**HE machine tool industry has shown a little more life the past week, although dealers' sales are still light. The demand for turret lathes has improved, but orders are limited to single machines. A Toledo manufacturer purchased two Pratt & Whitney jig boring machines. The only pending railroad inquiry is from the New York Central for a journal turning lathe. Some automobile companies in the Michigan territory have advised the trade that they will need considerable machinery for replacement this year, but at present very little business is coming from that source.

The outlook for export business is better than for some time, and inquiries have come from several European countries for automatic screw machines. Russia is among those inquiring. The Soviet Government is asking for 24 months' credit on machine tools.

The Ohio Truck Body & Wagon Co., 3291 East Sixty-fifth Street, Cleveland, will build a new plant on Regent Avenue. A. G. Simon, Hippodrome Building, is engineer.

The Hall-Fur Motor Truck Co., 1785 East Twenty-first Street, Cleveland, will move to Canton, Ohio, where it will erect a one-story, 60 x 200 ft. factory.

The National Smelting Co., Grand Avenue, Cleveland, has opened an Eastern office at 299 Madison Avenue, New York, to better serve its customers in that territory. Ben S. Rosenberg, who has been connected with several large Eastern smelters, has been appointed Eastern sales representative.

The Western Electric Co., 6215 Carnegie Avenue, Cleveland, with headquarters at 195 Broadway, New York, will take bids at once for a proposed five-story factory branch and distributing plant, 100 x 200 ft., on local site to cost \$275,000 with equipment. Christian, Schwarsenberg & Gaede, 1900 Euclid Avenue, are architects and engineers.

The Niles Corrugating Co., Niles, Ohio, has been organized by D. W. Kerr, formerly sales manager for the Trumbull Steel Co., Warren, Ohio, and associates, to establish a local plant for the manufacture of corrugated steel products.

The Board of Education, Shaker Heights, Ohio, plans the installation of manual training equipment in the proposed addition to the junior high school to cost \$500,000, for which bids are being asked on a general contract until March 14. Howell & Thomas, 3868 Carnegie Avenue, Cleveland, are architects.

The Patterson Foundry & Machine Co., Walnut Street, East Liverpool, Ohio, has acquired the former plant of the McLean Tire & Rubber Co., adjoining the site recently secured for a new plant, and will remodel in connection with the factory project. Work on the machine shop unit at the plant will begin this month.

The Olenberg Motor Sales Co., 3201 West Twenty-fifth Street, Cleveland, is preparing for a two-story service, repair and garage building to cost about \$100,000. L. F. Skeel, 2022 Tampa Avenue, is architect. E. G. Olenberg is secretary and treasurer.

## Pacific Coast

SAN FRANCISCO, March 2.

**T**HE Pacific Sheet Metal & Furnace Co., San Francisco, has removed its plant from 3200 Geary Street to 305 Valencia Street, where increased facilities will be provided.

O'Brien Brothers, 315 Montgomery Street, San Francisco, architects, have taken out a permit for a four-story automobile service, repair and garage building, estimated to cost \$200,000 with equipment.

The Pacific Ice Co., 354 Pine Street, Oakland, Cal., has plans for a one-story plant at Fruitvale to cost about \$40,000 with equipment.

The San Joaquin Light & Power Corporation, Fresno, Cal., is arranging an expansion and improvement program in



1927 to cost \$13,000,000. The work will include extensions in power plants, including additional equipment; a new automatic power substation at Bakersfield to cost more than \$100,000; other substations of this type in different localities, and steel tower transmission lines.

The Aberdeen Plywood Co., Aberdeen, Wash., care of John C. Hogan, Aberdeen, attorney, recently organized with capital of \$210,000, has acquired property heretofore owned by the Western Cooperage Co., and plans the early construction of a new mill to cost more than \$100,000 with machinery.

The Irvington Machine Works, Portland, Ore., has awarded a general contract to Carl H. Deffenbaugh, 1013 Morris Street, for a one-story machine shop, 50 x 100 ft., to cost about \$19,000 with equipment.

S. Karpen & Brothers, 636 West Twenty-second Street, Chicago, manufacturers of furniture, have acquired the plant and business of the Robert Cohen Co., Los Angeles, manufacturer of similar products, and a tract of about 4 acres adjoining. Plans are under way for the construction of two or more multi-story additions to cost more than \$250,000, with equipment.

The Illinois-Pacific Glass Co., Fifteenth and Folsom Streets, San Francisco, has awarded a general contract to William P. Neil, 4814 Loma Vista Avenue, Los Angeles, for the construction of a new one-story plant at Los Angeles, 80 x 320 ft., to cost in excess of \$100,000 with equipment. P. D. Burt, San Francisco, is engineer.

The Boise Cold Storage Co., Boise, Idaho, has plans for the construction of a one-story cold storage and refrigerating plant at Nampa, Idaho, to cost about \$60,000 with equipment.

The Common Council, Murrah, Utah, has revised plans under way for extensions and improvements in the municipal electric power plant, to include the installation of a Diesel engine, generator, and auxiliary equipment. T. J. McDonald is engineer.

The Feenaughty Machinery Co., 309 East Yamhill Street, Portland, is completing plans for a new three-story factory, 100 x 100 ft., to cost about \$60,000 with equipment. A crane runway will be installed. Ernest F. Kroner, I. O. O. F. Building, is architect.

The California Wire Screen Co., 1307 Temple Street, Los Angeles, has been organized to manufacture heavy mining, gravel and rock screen, and ornamental iron. It is in the market for wire and iron working machinery and equipment, as well as material.

The Mission Ornamental Iron Works, Compton, Cal., has been organized to deal in ornamental iron work, which will be manufactured by contract.

The Vogan Iron Works, 30 East Bellevue, Pasadena, Cal., has been incorporated with a capital of \$25,000 and will continue to do ornamental iron work and general blacksmithing.

The Johnston Pump Co., manufacturer of turbine and centrifugal deep well pumps, has established a manufacturing plant and sales office at 2324 East Forty-ninth Street, Los Angeles. It has an approximate floor area of 10,000 sq. ft., and represents an investment of \$150,000. Several service stations and branch offices will be maintained in the Southwest. The officers are: I. N. Johnston, president; D. G. Miller, vice-president and general manager, and J. H. Johnston, secretary-treasurer.

The Nachman Spring-Filled Co., Los Angeles, with headquarters at Chicago, manufacturer of automobile and furniture springs, will soon install additional equipment in its plant in the Central Manufacturing District to double its present output.

## Canada

TORONTO, March 7.

**M**ACHINE tool sales continue in about the same volume as those of previous weeks this year. Current purchases have been chiefly in single tools for replacement, with many of labor and time saving types. The automotive industry is showing more interest in the market and sales are increasing. Single tools for repair plants and garages are in demand from many sections of the country. General improvement has been noted in sales and shipments of tools and machinery to northern Ontario and Quebec for mining development work and plants. Inquiries are increasing and a brisk demand for tools is looked for early in the spring.

The City Council, Port Arthur, Ont., has made a new agreement with the Port Arthur Ship Building Co., the basis of which will be embodied in a by-law to be submitted

to the ratepayers on April 6. If carried, the company guarantees to spend \$300,000 in new development work and also guarantees an annual pay roll of \$200,000.

The foundry of the Carthage Co., Belleville, Ont., was destroyed by fire Feb. 23 with a loss estimated at \$75,000. The main molding shop, 60 x 50 ft., was completely gutted, while an addition to the foundry was also destroyed. Some interruption will be caused in operations but rebuilding and repairs will be made immediately.

Excavation work has been started in connection with \$1,000,000 proposed addition to the plant of the Canada Iron Foundries, Ltd., St. Maurice Street, Three Rivers, Que. Other contracts in connection with the undertaking will be awarded soon.

The New Zealand Government Railways, Wellington, New Zealand, are in the market for 120 jib cranes; 20 electric capstans; 4 electric mobile cranes; 3 electric traversers; electric overhead traveling cranes and other shop equipment. Bids on the above equipment are to be in by April 30.

The Galt Foundry Co., Galt, Ont., whose plant was recently destroyed by fire, plans to rebuild immediately and is interested in equipment. John Bibby, Kitchener, Ont., is owner.

The construction of a 1,000,000 bu. elevator at Owen Sound, Ont., is planned by the Great Lakes Elevator Co. at a cost of \$250,000. D. J. Kennedy is president of the company.

The Reliance Elevator Co., Port Arthur, Ont., is contemplating an addition to its local elevator to provide capacity for an additional 1,000,000 bu. of grain.

The Carpenter-Hixon Co., Ltd., Blind River, Ont., will start work soon on a \$6,000,000 lumber mill. Construction work will be carried out by the owners.

The Water Commission, Goderich, Ont., plans alterations and improvements to the pumping station, including the installation of new boilers and auxiliary pumping machinery. Plans will be prepared by E. H. Darling, engineer, 72 St. James Street North, Hamilton, Ont.

The city of Oshawa, Ont., is contemplating installing a sewage disposal plant to cost, including pumps and other equipment, approximately \$350,000.

The General Motors of Canada, Ltd., 52 Mary Street, Oshawa, Ont., will erect several new buildings in connection with its local plant to cost approximately \$1,000,000. Hutton & Souter, 6 James Street South, Hamilton, Ont., are architects.

A. J. Stringer, MacLean Avenue, Toronto, is preparing plans for a \$75,000 factory to be erected for the Hobbs Storage Battery Co. of Canada, Ltd., 511 Federal Building, Toronto. Tenders in connection with the project will be called about March 15.

### Western Canada

The Burrard Drydock Co., Ltd., North Vancouver, B. C., will start work at once on marine ways adjoining its plant to cost \$100,000.

Bids will be called soon in connection with the erection of a plant at Vancouver, B. C., for the Dominion Bridge Co., Ltd., Lachine, Que. Construction work will be in charge of the engineering staff of the company.

The Town Council, Lanigan, Sask., proposes to spend \$20,000 on an electric lighting plant. A. A. Murphy, Saskatoon, Sask., is consulting engineer.

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## Foreign

**T**HE International Power Co., Ltd., Montreal, operating the Venezuela Power Co., Ltd., Maracaibo, Venezuela, and vicinity; San Salvador Electric Light Co., San Salvador; Bolivian Power Co., Ltd., La Paz, Bolivia, and other light and power utilities in South America, is disposing of a bond issue of \$3,000,000, the proceeds to be used for the acquisition of the Porto Rico Railways Co., Ltd., and for extensions and improvements in power plants and systems. I. W. Killam, president, is also head of the Calgary Power Co., Ltd., Montreal.

The Sociedad Carbonifera de Marfil, Marfil, Province of Valdivia, Chile, operating coal-mining properties, has secured a Government concession to construct an electric light and power plant for service at Valdivia and vicinity. A fund of \$385,000 has been approved for the enterprise.

The Lahore Electric Supply Co., Ltd., McLeod Road, Lahore, India, is planning the installation of equipment for the production of brass and iron specialties for electrical service.

Plans are being developed for a number of new industrial projects in the vicinity of Sydney, Australia, to be carried out during the present year. The Metropolitan Vickers Co., Auburn, manufacturer of electrical machinery, is contemplating expansion in its local plant to cost close to \$250,000, of which about \$190,000 will be expended for new equipment. At this same place, Auburn, a company has been organized to construct a plant for the assembling of a national automobile, the parts and accessories to be made entirely in Australia. Work has begun by a company manufacturing farm machinery on a new plant at North Mead, including parts and assembling departments. The Goodyear Tire & Rubber Co., Akron, Ohio, is said to be arranging for the early construction of the initial unit of its proposed plant at Granville, near Sydney, where a tract of 20 acres was acquired last December. The American Consulate, Sydney, E. G. Babbitt, trade commissioner, has information regarding the various projects.

## Industrial Finances

The Marlin Firearms Co., New Haven, Conn., has reduced the par value of its preferred stock from \$100 to \$25 and increased the share capitalization from 1500 to 6000 shares.

The outstanding capital of the Berlin Construction Co., Berlin, Conn., has been reduced by the purchase of 557 shares of preferred stock from the estate of George H. Sage and the retirement of 443 of these shares.

The Henry G. Thompson Co., New Haven, Conn., maker of hack and band saws, has increased its capitalization from \$60,000 to \$600,000, or from 600 to 6000 shares having a par value of \$100 each.

The American Chain Co., Inc., Bridgeport, Conn., has sold to bankers \$11,000,000 worth of 7 per cent cumulative preferred stock. The primary purpose of this sale was to exchange the stock for Class A shares, with the privilege of holders of Class A shares to subscribe to additional new shares. No public offering of the new issue will be made until after March 15.

The National Acme Co., Cleveland, reports net profits for 1926 of \$207,721, after all charges including interest payments and depreciation. This compares with net profits of \$573,402 in 1925. Net sales last year were \$7,635,447 or \$1,582,000 less than during the previous year. A continued improvement in the general condition of the company is reported for the year.

The Ohio Brass Co., Mansfield, Ohio, reports net earnings during 1926 after depreciation and Federal taxes, of \$2,501,656, or \$8.23 a share after preferred dividends on 2,888,387 shares of no par common stock. This compares with \$2,200,151 in 1925.

The Wellman-Seaver-Morgan Co., Cleveland, reports a profit and loss surplus during 1926 of \$211,028, which, after allowing for preferred dividends not paid, is equal to \$3.90 a share on 25,870 shares of common stock. The total assets are \$1,111,790 and current liabilities, \$318,315.

Federated Metals Corporation, New York, reports net sales for the six months ended Nov. 30, 1926, of \$27,900,340, a net operating profit of \$554,116 and a net income after all charges of \$249,238. This compares with net sales of \$29,445,342 during the previous six months and a net operating loss during the same period of \$409,219.

American Locomotive Co. and subsidiaries, 30 Church Street, New York, reports net earning for 1926 of \$10,352,193, equal after depreciation and Federal taxes to a profit of \$8,015,939, compared with a net loss of \$843,321 in 1925.

## THE LAST WORD

(Contributed by the Reader Service Department of the Iron Age Publishing Co.)

"Do you know Condé Nast?" inquired our friend, David Straus, president of the Continental Iron & Steel Co. Upon being informed of Mr. Nast's misfortune, he continued:

"Here's why I want to meet someone who knows him. A few weeks ago I went to Palm Beach. At the

Hotel I was received with overwhelming cordiality. The room clerk greeted me like money from home. The cashier smiled and bowed; the bell boys reversed the process. And as I entered the dining room, even the head waiter beamed on me.

"As I did not know a soul in the hostelry, I was mystified. But the second day a bell boy gave me the solution by asking, 'You're Mr. Condé Nast, aren't you?'"

"Now, I want to find out what Nast looks like so that I'll know whether I was complimented or insulted."



"I see that the President has raised the tariff duty on pig iron and iron kentledge," observed the new member of the staff. "What is 'kentledge?'"

"You don't know what kentledge is?" said Omniscient Oliver, the office encyclopedia. "Why, I'm surprised. I thought everybody knew that. Now, let's see. Kentledge is a—er—er—an iron—an iron—(reaches for Tiemann's). Oh, yes, just as I thought. It's pig iron shipped on a vessel for ballast."

## The More Firma, the Less Terra

For us, watching the erection of a steel structure has always held more thrills per minute than the most daring "high and lofty tumbling" act. If we had our choice of being a sky-going riveter or of starving to death, we would cheerfully choose the latter.

Balancing oneself on a few inches of steel, several hundred feet from terra firma, may be preferable to a political job in Nicaragua, but the Department of Labor's accident statistics are far from reassuring. The accident severity rate among structural iron workers has increased 97 per cent in the past 15 years.

As the colored gentleman said to the aviator, "No, suh. Ah loves mah terra firma, and the more firma, the less terra."

## "Swing Low, Sweet Chariot"

The sweetly sentimental practice of naming blast furnaces after members of the unfair sex was commented upon recently in this column. Bessie, Ella, Lucy, Mattie, Betty, Eliza and Carrie were given as examples of names actually in use.

But the sterling silver Louis XIV skiphoist, awarded for the most distinctive name, goes to Mrs. William Warmack, Lamkin, Miss., who owns a charcoal iron furnace answering to the name of "Ole Miss Furnace."

If I had not glimpsed this with my own optics in the American Iron and Steel Works Directory, I would have sworn it was the name of a Negro spiritual.

A. H. D.

